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

# STATEMENTS

## for Teaching through Design for Sustainability of the Built Environment and Heritage Awareness


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# Statements for Teaching through Design for Sustainability of the Built Environment and Heritage Awareness

IO3 lead:  Vladan Djokić, Ana Nikezić, UBFA

HERSUS Project leader: Vladan Djokić, UBFA

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HERSUS

# Content

*Note: These analysis were prepared or accomplished by individual author/group of authors in relation to their professional expertise and backgrounds. The views, thoughts, and opinions expressed in the analysis and statements belong solely to the author/s of specific analysis and do not directly reflect the view of the whole HERSUS consortium.*

# INTRODUCTION

HERSUS project Intellectual Output 3, titled "Statements for Teaching through Design for Sustainability of the Built Environment and Heritage Awareness" presents a strategy containing (1) necessary qualifications that an architect has to obtain in order to be competent for architectural and urban design, as well as (2) up-to-date qualification that architectural educator needs to obtain in order to advance teaching about the sustainability of the built environment and heritage awareness. The output elaborates proposals regarding the contents and the methods of teaching of the architectural education in the initial defined fields: Sustainable Reconstruction in Urban Areas, Adaptive Reuse and Resilience and Climate Change. Having in mind that the development of IO1 and IO2, as well as, HERSUS Webinar have posed different challenges for all HERSUS researchers, the IO3 aims at reaching a consensus among the HERSUS consortium on concepts and fields of action relevant to sustainability and heritage. In this sense, the initially defined fields are reviewed and hence, the IO3 enables a consensus established through a multigeographical and multicultural perspective across Europe.

GENERAL BACKGROUND:
In the 21st century, the cities urbanisation is passing through significant changes, and the practical arena of architectural and urban design requires the advancement in teaching about the sustainability of the built environment and heritage awareness. The main characteristic that could be distinguished behind the previous analysis is that the present teaching methods and practices of sustainability and heritage are widely questioned and have an increasing interest of the management of HEIs. More specifically, this issue has three-fold complementary perspectives:
(1) the contemporary content of the teaching of the subject areas,
(2) the qualitative and quantitative position of the subject areas in a school curriculum, and
(3) the accomplished methods for the transmission and crossing of the knowledge of the subject areas.

In this context, a particularly important objective is to clarify this new condition of sustainability of the built environment and heritage teaching and discuss its characteristics.

The idea for IO3 arose from the need to bring together teaching staff and experts in disciplines of the built environment to formulate the new unique students' profiles. Statements for teaching bring the innovative element through the implementation of interdisciplinary teaching based on learning by design methodology. Upon completion of the IO3 publication, the HERSUS target groups (students/teachers/trainers/tutors) could use this book to gain a clearer picture of specific training and teaching activities that can enable the alignment of the needs of the practice and teaching of the sustainability of the urban and architectural heritage.

Recommendations on education for the sustainable architectural and urban design sector are produced. The strategy also builds on the results of Seminar C1 – SWOT Analysis. These tools serve to provide a coherent set of information and a programme of advanced teaching modules for architectural and urban design educators. A step closer to reaching an integral professional profile of an architect is primarily the case of thematic enhancement and specialisation rather than structural change of study programmes. This can be achieved through the introduction of different research and educational areas that follow the contemporary course of theory and practice. The project is striving to create a new innovative educational framework that can integrate vital educational challenges in the field of architectural and urban design. The aim is to link scales, to challenge different types of problems, to generate sustainable-based approaches, and to

It is expected that educators would create a new way of thinking and teaching of different European spatial contexts through the shared experience. The IO3 will be a set of recommendations for partners, whose aim is to strengthen and expand cooperation with practice and to strengthen and disseminate the idea of interdisciplinary teaching with respect to the immediate environment of different cultural contexts. Development of teaching strategies will contribute to the better understanding of needs in terms of defining a new professional profile of the students through the exchange of experiences between teaching staff, public and private sector on M1, C1 and E1 in terms of (1) Environmental and Contextual Issues relating to Architecture as well as (2) Collaboration & Interdisciplinarity in Architecture.

In the course of redefining the professional profile of architect through the HEI system, there is a constant striving towards achieving an integral profile - one that will have the capacity and skills:
(1) to connect different scales (from urban to architectural),
(2) to identify different types of problems and solve them through the design, and
(3) to make our environment and cities sustainable for the future.
This output is the primary input for the development of "Book of courses" which will be developed by the academic institutions as a part of the project (IO5). It will be presented in the form of a pedagogical strategy and should be disseminated in all schools of the participating countries and to the broader audience as well. Therefore, the strategy will be available for discussion via the "HERSUS Sharing Platform" (IO4) and HERSUS Website among educators, professionals, and architects from all over Europe.

Based on activities M1, C1 and E1 and gathered experiences from IO1 and IO2, the Statements for teaching will provide ground for discussing content, pedagogical methods, guidelines and future structure of curriculum for teaching within the partner organisations in the relevant fields. IO3 should define and elaborate on professional competencies which need to be developed both by (1) architect/urban designers, and (2) architectural educators.

The Strategy will consist of two parts. The first part of the report connected to a new profile of an architect/urban designer should define both (1) general skills, and (2) specific skills which are needed to be developed through the implementation of new courses. The strategy should formulate students' profiles so that they are trained in the broad architectural domain, that possess technical, technological, socio-humanistic and artistic skills and, therefore, that can contribute to the socio-environmental challenges of the 21st century. The second part of the report connected to a new profile of architectural educator should define both (1) general skills, and (2) specific skills which are needed to be adopted among the educators before the implementation of new courses. The strategy should formulate educators' profiles so that they can be responsible for the improvement of the education and training of future architects/urbanists to enable them to meet the expectations of 21st-century societies worldwide for sustainable human settlements in different cultural contexts.

The IO3 study is prepared in a form of publication which consist of following sections:
Introduction: General Background, Research Phases and Methodology, Study Development,
Teaching Vademecum on Heritage and Sustainability: Statements on Notions, Ideas, Design Strategies, Design Tactics, Tools and Techniques, and Heritage Types relevant for the HERSUS scope through defining:
• General Definition/Explanation of Notion, Idea, Design Strategy, Design Tactic, Tool and Technique, and Heritage Type,
• Literature Selection relevant for Notion, Idea, Design Strategy, Design Tactic, Tool and Technique, and Heritage Type,
• Content WHAT? – Defining relevant content for learning and teaching on specific Notion, Idea, Design Strategy, Design Tactic, Tool and Technique, and Heritage Type,
• Methods HOW? - Defining relevant methods for learning and teaching on specific Notion,

Idea, Design Strategy, Design Tactic, Tool and Technique, and Heritage Type,

- Goals WHY? – Defining learning goals in line with specific Notion, Idea, Design Strategy, Design Tactic, Tool and Technique, and Heritage Type,
- Course Type – Mark course type/types which could engage specific Notion, Idea, Design Strategy, Design Tactic, Tool and Technique, and Heritage Type,
- Scale – Mark scale/scales which is relevant for learning on specific Notion, Idea, Design Strategy, Design Tactic, Tool and Technique, and Heritage Type,
- Learning outcomes – describe expected learning outcomes for students/ competencies which they could obtain through learning on specific Notion, Idea, Design Strategy, Design Tactic, Tool and Technique, and Heritage Type,
- Teachers' Competences – explain necessary competencies of teachers who could be engaged in teaching process of specific Notion, Idea, Design Strategy, Design Tactic, Tool and Technique, and Heritage Type.

Review of Statements/Strategy - defining and elaborating on professional competencies which need to be developed both by (1) architect/urban designers, and (2) architectural educators based on Teaching Vademecum on Heritage and Sustainability – synthesis of analysis.

The basic idea of the central part of IO3 entitled Vademecum on heritage and sustainability is reflected in a dual perspective: (a) establishing statements about the relevant notions, ideas, design strategies, design tactics, tools, techniques and heritage types, and (b) establishing statements about their importance for the domain of education. The Vademecum will present a series of analysed terms according to the structure from the proposed template and will together with IO1 and IO2 represent the basis for the later creation of the Book of Courses (IO5) through the intersection of different statements.

RESEARCH PROCESS

IO1, LTT1, E1, IO2 results and conclussions and contents

SWOT ANALISYS

IO3 conceptualization
Methodology Proposal Development

Methodology Presentation, Collecting Comments and Reflections

Work on IO3 Tag matrix
Proposing terms and categories

Finalization of IO3 Tag matrix
Finalization of IO3 Protocal

Selection of terms and
Analyzis of terms

Designing Teaching Vademecum on Heritage and Sustainability

Working on Synthesis of terms and Statements

# HOW TO READ

HERSUS VADEMECUM STATEMENTS

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GENERAL INFO ON TERM AND AUTHORS

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WHAT, HOW, WHY, BY WHOM TO BE TOUGHT

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AT WHAT COURSE TYPE , WHICH SCALE AND WHAT OUTCOMES TO EXPECT

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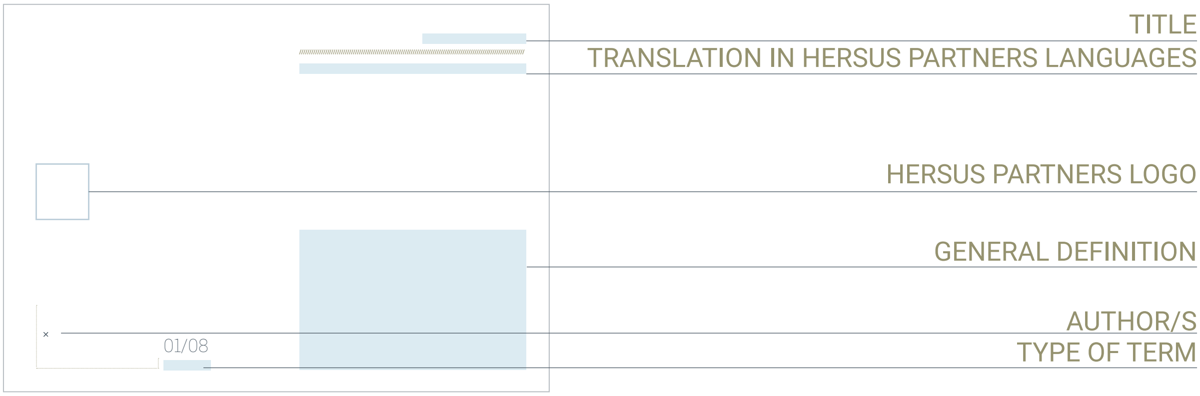
RELEVANT REFERENCES FOR THEORY AND PRACTICE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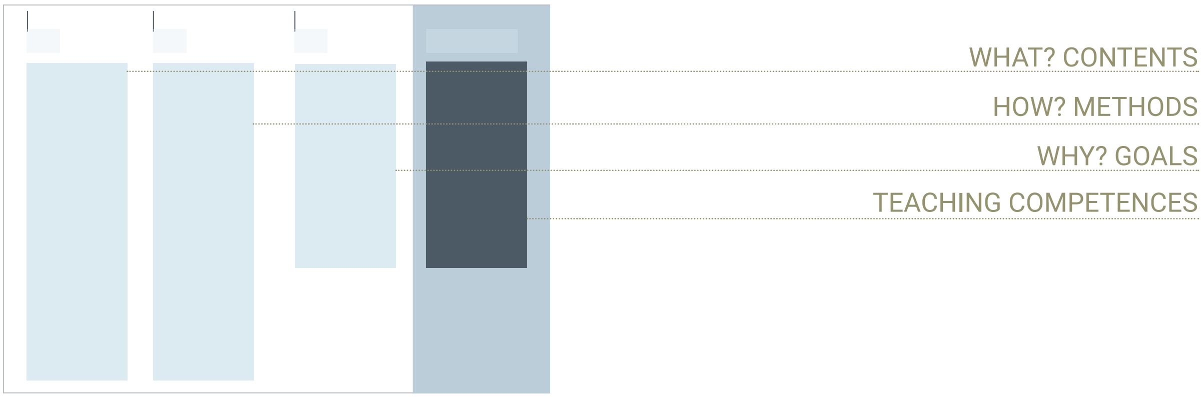
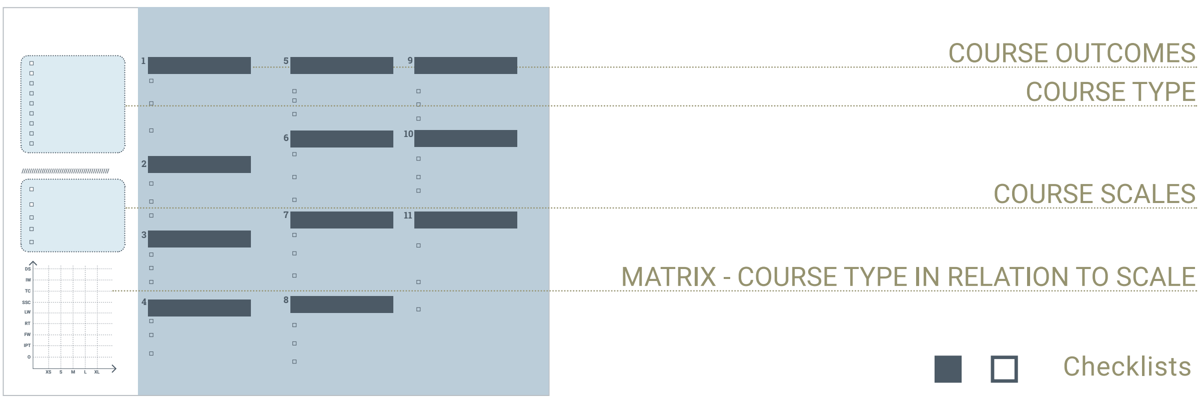
TITLE
TRANSLATION IN HERSUS PARTNERS LANGUAGES
HERSUS PARTNERS LOGO
GENERAL DEFINITION
AUTHOR/S
TYPE OF TERM


WHAT? CONTENTS
HOW? METHODS
WHY? GOALS
TEACHING COMPETENCES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COURSE OUTCOMES
COURSE TYPE
COURSE SCALES
MATRIX - COURSE TYPE IN RELATION TO SCALE
Checklists


RELEVANT EXAMPLE ID
RELEVANT EXAMPLE EXPLANATION
RELEVANT EXAMPLE PHOTOS
KEY REFERENCES

# terms

# NOTIONS

Cultural and Collective Memory

Urban Narratives

Resilience

Urban Patterns

Heritage genealogy

Cultural Studies

Cultural Identity

Cultural Enhancement

Cultural Heritage

Università Iuav
di Venezia

Iuav

Sofia Tonello

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# CULTURAL AND COLLECTIVE MEMORY

*културна и колективна меморија • Memoria collettiva e culturale • Πολιτιστική και Συλλογική Μνήμη • Memoria Cultural y Colectiva*

## GENERAL DEFINITION/ EXPLANATION

**Memory** comes directly from Latin *memora* "memory, remembrance, faculty of remembering," abstract noun for *memor*, "mindful, remembering". According to the *Nara Document + 20*, memory is embodied by information sources such as "all physical, written, oral, and figurative sources that underlie the understanding and appreciation of nature, specificities, meaning, and transmission of cultural heritage". Marc Augè considers the place (landscapes, cities, buildings, and monuments) as a **memory** keeper (2006). The tangible assets are not only voluntary monuments but all the expressions of man activities as "part of the cultural formation of their inhabitants and their social belonging" (Augé, 2008). All physical and figurative sources are expressions of intangible values such as **collective memories**. Buildings and human traces in Landscapes "make places recognizable and allow the identification of cultural assets and individual and collective memory." (Augé, 2008)

# WHAT?

## CONTENT

Research on **collective and cultural memory** should be based on theoretical concepts, the study of historical and archival sources, oral histories, case studies, interviews, surveys, and discourse analysis. In terms of educational perspective in Cultural Heritage Master degrees and Specialization Schools should help students to clarify complex relate to the link between tangible and intangible issues such as Material – Authenticity or Memory – Reconstruction.

Education on **cultural and collective memory** helps students to wider perspectives about cultural heritage identification, conservation, and enhancement.

# HOW?

## METHODS

The general teaching philosophy for the **Cultural and Collective memory** should involve an interdisciplinary approach to the past evidence and be led by critical and theoretical components. The theoretical and interdisciplinary components consider the relationships between tangible and intangible aspects.

The learning styles should include ex-cathedra lectures, practical activities and seminars with invited lecturers.

Ex-cathedra lessons focus on the theoretical aspect through the critical analysis and interpretation of international theoretical frameworks, charters, and national legislation.

Practical workshops and field activities are useful for transmitting to students the tools to process social survey data, such as interviews for defining the evolution of cultural values over time and the consequences in **collective and cultural memory**.

Seminars are helpful tools to present various emblematic case studies and critic them with experts.

# WHY?

## GOALS

The main objective regarding **Cultural and collective memory** in Higher Education programmes will be to transfer methods and skills of analysis of the built heritage, cultural and social environment. Students should understand how to deal with the different historical, cultural, and legislative sources and acquire the ability to relate the intangible values of the memory to the tangible elements that society produced. Students should also acquire the ability to communicate using the specialized terminology and methods of discourse appropriate to the field.

## TEACHERS' COMPETENCIES

The knowledge transfer of **Cultural and collective memory** need an interdisciplinary and multi learning approach.

The lessons to be effective in the transmission of cultural, theoretical, and social aspects should consider:
- the clear presentation of learning outcomes and outcomes verification;
- the sharing of teaching material on the theoretical framework;
- the stimulation and motivation interest in the issues introduced.

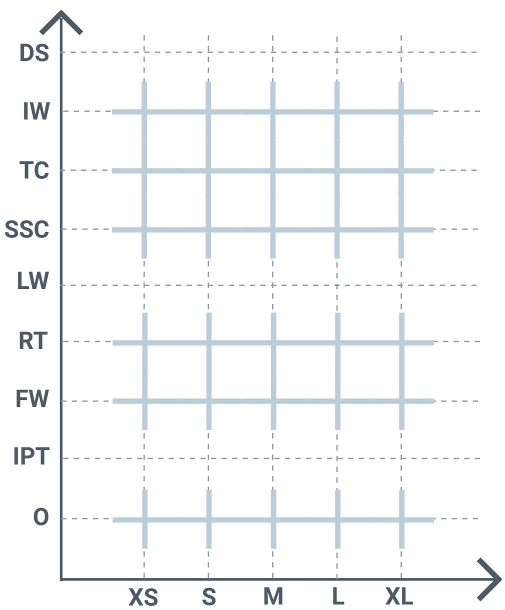
To achieve a high level in learning outcomes and students comprehension of the topics, it can be helpful that the teacher is available for clarifications and explanations.

## COURSE TYPE

- [ ] Design Studio (DS)
- [x] Intensive Workshop (IW)
- [x] Theory Course (TC)
- [x] Seminar (short comprehensive) (SSC)
- [ ] Laboratory work (LW)
- [x] Research Thesis (RT)
- [x] Field work (FW)
- [ ] Internship Practical training (IPT)
- [x] Other (O)

## SCALE

- [x] Construction Detailing and Interior Design Scale (XS)
- [x] Architecture: Buildings Scale (S)
- [x] Urban Design Scale (M)
- [x] Urban and Regional Planning Scale (L)
- [x] Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [x] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [ ] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [x] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [x] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [x] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [x] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- [x] how the theories, practices and technologies of the arts influence architectural design;
- [x] the creative application of the fine arts and their relevance and impact on architecture;
- [x] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- [x] theories of urban design and the planning of communities;
- [x] the influence of the design and development of cities, past and present on the contemporary built environment;
- [x] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

□ the needs and aspirations of building users;

■ the impact of buildings on the environment, and the precepts of sustainable design;

■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

□ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;

□ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;

■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;

□ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;

□ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

□ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;

□ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;

□ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

□ principles associated with designing optimum visual, thermal and acoustic environments;

□ systems for environmental comfort realised within relevant precepts of sustainable design;

□ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

□ critically examine the financial factors implied in varying building types, constructional systems, and specification

□ understand the cost control mechanisms which operate during the development of a project;

□ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

□ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;

□ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;

□ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

//////////////////////////////////////////////

Project title and location:

- The reconstruction of the Centre of Venzone

Authors:

- arch. Francesca Sartogo, prof. Gianfranco Caniggia, prof. Romeo Ballardini, arch. Francesco Doglioni and others

Year (period) of the project

- 1977-1985

Venzone is a fortified town from 1258, and the town and the fortified system were declared as places of cultural interest in 1965. After the two great earthquakes in Friuli Venezia Giulia between May and September 1976, the city of Venzone was in ruins. The administration and population were aware of the extent of the material and cultural loss. The stones of the ancient Venzone were re-used in the reconstruction of the new city. Venzone was rebuilt with the integration of seismic safety criteria and the addition of new materials such as reinforced concrete and steel.

Venzone

1963 - 2016 | TERRITORI DELLA RICOSTRUZIONE - Iuav per l'emergenza

Figure 1. QR Code for more information about example.
*Sourcehttps://iuav-labgis.maps.arcgis.com/apps/Cascade/index.html?appid=2e492ec0e93e4495be00a86f94ea8626*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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# URBAN NARRATIVES

*урбани наративи • Narrazioni urbane • Αστικές Αφηγήσεις • Narrativas Urbanas*

## GENERAL DEFINITION/ EXPLANATION

Diverging notions of what is meant with and under narrative(s), it's (their) function and use has been in the centre of research and practical attention in previous years especially regarding the narrative and rhetorical structure of urban theory, planning and design. The concept of narrative is "borrowed" from literary theory, where notion of narratology is commonly described as the study of narrative structure, looking at what narratives have in common and what makes one different from another. Accordingly Paul Ricoeur (1984) explains narrative as a number of events that are connected into meaningful whole due to the dynamics of plot that refers to the configurational arrangement of heterogeneous events that is based on their causal relation. James A. Phelan (2007), a representative of rhetorical narratology, defines narrative as "somebody telling somebody else on some occasion and for some purpose(s) that something happened" and he understands narrative primarily as a "rhetorical act". Narrative turn or „story turn" in urban and planning theory happened, as stated by the Leonie Sandercock (2010), in the beginning of the 1990s and it has several methodological roots that are associated with Foucauldian interest in discourse, storylines and argumentation and with the post-Habermasian interest in the way that language shapes human interaction including planning and policy. Multiple ways of understanding and using urban narrative as conceptual device and tool in the processes of argumentation and storytelling within the design and planning process makes it of symbolic value that could be addressed through representing, mapping, photographing etc.

# WHAT?

## CONTENT

Generally urban narrative is seen as something descriptive, which reflects the state of things within the built environment. However due to different contemporary turning points urban narrative could be also examined as notion that is prescriptive and normative, and that has an serious impact on shaping the built environment especially regarding the sustainability and heritage.

Urban planning nowadays is increasingly conceived as a form of “persuasive storytelling” (Throgmorton 1996), while storytelling is part of urban design that takes into account “stories of place can inform designers about the narrative fabric that is as much a critical part of the context of a site as the soil type” (Mark Childs, 2008). Also “Narrative is a means of understanding and describing the world in relation to agency. It is a means of linking locales, landscapes, actions, events and experiences together providing a synthesis of heterogeneous phenomena” (Christopher Tilley, 1994). By acknowledging the importance of these issues future professionals should be equipped with specific knowledge, skills and different methods in order to relate to urban and architectural narratives, and start defining key concepts for a narrative analysis, modes of storytelling and their use in urban planning and design.

Learning process should include the information about “storyfication” of planning and policy, and of the “narrative turn” in planning theory, narrative mapping, cartography of narratives and all other micro-narratives that act within a broad ecology of narratives, including media narratives, everyday citizen narratives, and cultural representations of space.

# HOW?

## METHODS

General teaching approach will be information-oriented with theoretical insight into existing definitions of urban narrative, its use and significance in contemporary urban and planning theory.

Each theoretical notion should be spatially comprehended and represented in order to make formal connection and relation between abstract ideas of various narratives and their practical manifestation. Typology of **urban narratives** should be addressed parallel with promotion of added value of a narrative approach in establishing critical thinking in evaluation of cultural heritage and sustainability analysis. Symbolic order of urban narrative should be addressed through three perspectives - charting and understanding the city’s various layers of meaning by way of a narrative mapping, examination of narrative strategies and rhetoric in planning and developing new conceptualizations and methodologies that could reconcile local narratives with planning perspectives.

Practical part of the course should be implemented through generating (a) *Atlas* (as collections of maps, diagrams, cartograms), (b) *Guide* (manuals, recipes, a game, instructions) and Archives (database, indexes), but also many other forms of narratives, any form that organize information.

# WHY?

## GOALS

Teaching intentions should include general notion of narrative turn in urban planning and design and future unfolding of built environment. In this process areas of literary theory, urban and architectural history and theory, sociology, philosophy and other humanistic sciences should be covered. From planning and design perspective, narratives are often used in the form of explanations, regulations and arguments about changes in the pattern of spatial activity, form, function etc. Accordingly different form of new knowledge regarding this issues is needed that provide a new line and plot for stories that will describe and stimulate alternative futures and alternative roles of cultural heritage and sustainability. **Urban narratives** provide a means to make sense of and understand social phenomena and individual experience, user needs, regulations, spatial transformation etc. By learning about different forms and types of **urban narratives** in the context of planning and design new tools tool for scholars, planners, and the general public could be developed that will be used in defining more precise terms about cultural heritage, context, and objectives of **urban narratives** in sustainable development.

## TEACHERS' COMPETENCIES

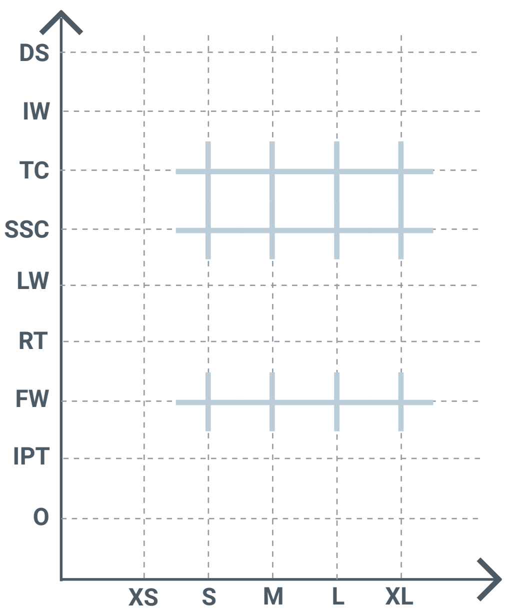
Teacher competencies should include knowledge in correlation with
**social sciences and humanities**
aligned with specific knowledge and expertise regarding
**built environment, urban planning, urban design and architecture.**

## COURSE TYPE

- ☐ Design Studio (DS)
- ☐ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ☐ Research Thesis (RT)
- ■ Field work (FW)
- ☐ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ☐ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ☐ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ☐ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ☐ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ☐ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Area:

- Kalasatama (Eastern Harbour) and Jätkäsaari (West Harbour), Helsinki waterfront

Area transformation:

- 2008-2040

Figure 1. Historical images of Jätkäsaari (West Harbour).
*Source: WikiCommons, CC BY 4.0*

Having in mind that in this case "notion" is described it would be very difficult to prove its direct implementation in any relevant example. However in this case an example of using the notion of urban narrative in planning and design process could be found in the project for the Helsinki waterfront and two specific areas – Kalasatama (Eastern Harbour) and Jätkäsaari (West Harbour). As stated by Lieven Ameel (2020), in the planning process of Helsinki waterfront "narratives are found in various forms from the usual, almost book-length urban planning documents, to official websites with historical stories of the area, to branding and marketing narratives such as the graphic identity that was created for Jätkäsaari". Her indebt analysis of this process could be used as illustrative example of using various urban narratives and their different typologies in urban planning and design of Kalasatama and Jätkäsaari previously used as industrial sites. This claim of using urban narrative in "plotting of the Helsinki waterfront" is supported by the claim that the development of Jätkäsaari was proceeded and accompanied by commission of a literary novel – book Hyvä jätkä (Good Chap; 2009) that was distributed to future residents and that in Kalasatama "comic reels aimed at the general public and by place-making strategies ranging from imaginative toponyms to co-creation and artistic interventions" were profusely used.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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03/09

**notions**

statements

# RESILIENCE

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*резилијентност • Resilienza • Ανθεκτικότητα / Επανατακτικότητα • Resiliencia*

## GENERAL DEFINITION/ EXPLANATION

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The term **Resilience** acts as a “boundary object” having significance and emerging attention across many disciplines, and can therefore foster mul-tidisciplinary scientific collaboration. The concept is well established in engineering, psychology, and disasters literature while ecologist C.S. Holling’s seminal paper (1973) is often cited as the origin of modern resilience theory. In the domain of spatial planning, the use of the term has been conjoined to the urban domain (cities recognised as complex systems) used extensively to denote possible solutions for climate change mitigation and the remedial actions to sudden stresses either caused by it or by other stressors - the onset of Covid ’19 certainly reframed the nuances of risks to be faced. According to the working definition provided by Meerow, Newell, and Stults (2016):

*“Urban resilience refers to the ability of an urban system-and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales-to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity.”*

# WHAT?

## CONTENT

As overarching notions, the terms **resilience** and sustainability are sometimes viewed as interchangeable but are truly not. An extensive review of the relevant literature by Zhang and Li. (2018) concluded that:

*“Urban Resilience is the passive process of monitoring, facilitating, maintaining and recovering a virtual cycle between ecosystem services and human wellbeing through concerted effort under external influencing factors; while*
*Urban Sustainability is the active process of synergetic integration and co-evolution between the subsystems making up a city without compromising the possibilities for development of surrounding areas and contributing by this means towards reducing the harmful effects of development on the biosphere.”*

Resilient strategies might not necessarily create sustainable outcomes while the same can be found for the reverse.

Heritage, and in particular the built heritage of Historic Cities provides an opportunity for a glimpse into the evolution of urban systems interaction. The study of historic cities’ resilience is well established and can inform current strategies for resilient planning. Furthermore, the function of heritage in enabling resilience in urban areas studied along with the function of collective memory in recovery after disaster denote a small evolution from the risk-avoidance mentality of heritage conservation and appreciation.

# HOW?

## METHODS

The notion of **Resilience** / **Urban Resilience** necessitates a shift in the wider economic practices and the means of production and has wider implications for society. The issue can be introduced through lectures / seminars, an information-oriented approach which also should be Integrated/ inter-professional. Further and more in-depth studies of the notion in the context of applications – problem/design based approaches – can be facilitated through studios or project/research thesis; these can also introduce/expand community based approaches which are essential for the appreciation of resilience on multiple levels. A critical interdisciplinary re-evaluation of built heritage and historic cities through the lens of “**Resilience**” can enrich our understanding of the eco-systemic nature of cities. Resilient planning / design applications entail an analytic approach that can be applied both to heritage and sustainability studies (risk avoidance/ management / preventive preservation / evaluation of the role of heritage in social, cultural, infrastructural resilience) requiring an interdisciplinary supervision and critical thinking on the part of students. In line with the above, students and experts in Greece have hinted to the need for a hands-on student and community-centred learning environment on matters transgressing sustainability and built heritage.

# WHY?

## GOALS

- Introduction to Resilience / Urban Resilience, key concepts and differences – Resilient Vs Sustainable Vs Smart City
- Urban resilience for whom, what, when, where, and why? Contested notions, critiques and implications of the use of the term.
- International and national context, policies, strategies and indicators adopted in the direction of the Urban Resilience.
- A global view of Urban Resilience – Comparative analysis of sustainability and resilience indicators across Case Studies for Urban Resilience – Resilient Cities Network
- Cultural Heritage and its impact on Urban Resilience
- Cultural Heritage and climate change mitigation strategies
- Natural Heritage in the context of recovery processes / Recovering Natural Heritage after natural disasters

## TEACHERS' COMPETENCIES

In order to introduce **Resilience** as an interdisciplinary notion and **Urban Resilience** as a new way of thinking about the built environment, the educator needs:
- To enable a transdisciplinary reading of the relevant bibliography, becoming a moderator of experts' or invited speakers.
- To transgress from the role of the knowledgeable expert to that of the reflective agent both during theory delivery and also in the context of studio supervision
- To enable the comparative reading of case studies on local/international endeavours in urban resilience, introducing an on-site, hands-on approach enabling links with Public Authorities, Policy Makers and NGOs, requiring interpersonal and networking competences.

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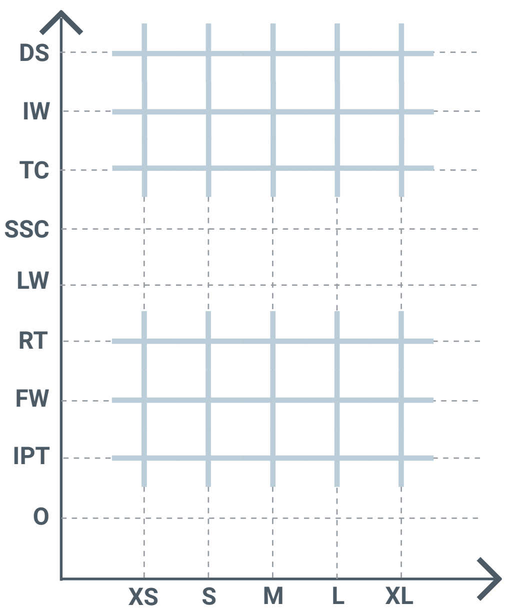


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- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Comparative analysis of three case studies:

- i) transitions in flood risk management in the Netherlands,

  ii) urban–rural trade-offs in response to global market influences on the Bolivian quinoa market, and

  iii) the heterogeneous adaptive capacities that give rise to resilience trade-offs between community and individual scales in Ugandan slums.

Type:

- Flood Risk, Resilient farming, Slum Resilience

Function:

- Rish Management, Farming, Housing/Infrastructure

Location:

- Netherlands, Bolivia, Uganda

Studied under:

- Chelleri, L., Waters, J. J., Olazabal, M., Minucci G. (2015). Resilience trade-offs: addressing multiple scales and temporal aspects of urban resilience. *Environment & Urbanization*, 27(1), 181–198.

The network of resilient cities https://resilientcitiesnetwork.org/urban-resilience/, can be a valuable resource for case study examples of pilot projects applied on many scales – architecture/urban/regional, etc., which are indicative of the state of the art in the field. Nevertheless, in order to allow the better comprehension of methodological and theoretic implications of resilience planning the case study should focus on a comparative analysis, as shown in the proposed article. The methodology proposed can allow the manifold implications/tensions of resilient / sustainable planning/design in the context of the globalized society.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Vladan Djokić

04/09

**notions**

statements

# URBAN PATTERNS

*урбани обрасци • Tessuto Urbano • Αστικά χωρικά πρότυπα • Patrones Urbanos*

## GENERAL DEFINITION/ EXPLANATION

Pattern is a model or landmark in respect to which the things and phenomena may be determined, in respect to which the order can be made inside a thing or among several things (Djokić, 2009a). The notion of **urban pattern** originates from the framework of urban morphology based on the starting point that the principles of morphology and typology are noticed as unavoidable for comprehension of the entire context of the discipline of architecture and urbanism.

The basic manner of morphological researches is the comparative method, namely comparative analysis which comprises the analysis of the pattern in origination and development of a certain element as well as its identification within the wider context. In the field of architecture and urbanism the comparative study of the forms, conditions and manner of origination of spatial structures of the city present a prevailing methodological procedure. In this sense, the specific aspect of **urban patterns** decoding in architecture and urbanism lies in observation and study of the city form and structure, particularly its built parts and open spaces: entities, blocks, buildings, streets, squares, parks, offshore areas, etc. (Djokic, 2009b).

This domain from heritage perspective includes a multitude of activities which are concentrated in the urban space which cannot be isolated from the context.  Any part of the urban space (a building, a block, a square) presents a unique entity, however, at the same time it is also part of the wider environment the integral part of which it makes together with certain genetic properties. Accordingly, **urban patterns** research and decoding engage multiscale approach from the regional level to the scale of one room inside a building, but he emphasizes the interconnected nature of the patterns (no pattern is isolated entity).

# WHAT?

## CONTENT

The content of the analysis and learning of **urban patterns** notion implies a complex consideration of the key morphological features of urban spaces as well as their interdependence with the functional characteristics and cultural context in which they are located. Morphological features are considered typologically, based on the key characteristics for their understanding. The overall phenomenon of the city structure is observed morphogenetically, ie within the historical continuity of its origin, development and changes over time.

In this sense, students get acquainted with the complex phenomenon of morphology and typology of urban spaces through (a) training for typological perception of morphological characteristics of urban spaces and (b) demonstration of understanding the process of forming guidelines for the development and transformation of morphological patterns of urban spaces.

Three main pillars of learning could be derived regarding **urban patterns** notion both as theoretical supports and practical application:

- Character of typological research in architecture and urbanism
- Principles of morphological research in architecture and urbanism
- Cooperation of typology and morphology.

# HOW?

## METHODS

The leading position within this challenge has the typological classification performed in several steps: (1) a selection of measurable criteria (primary and secondary) in order to determine affiliation to a particular type of **urban patterns** including criteria of urbanistic parameters, formal and functional structure, as well as environmental conditions and cultural indicators, (2) after the selected criteria, a matrix of criteria will be formed on the basis of which **urban patterns** will be selected, and (3) representative examples of types in particular study field (urban context) will be selected.

**- Quantitative analysis** should be conducted through configurational analysis in order to quantify the capacity of urban configuration, structure, and encounter patterns within urban context. The analysis should be based on the calculus of spatial properties and urbanistic parameters of form elements that derive from the spatial relations that they establish with all other form elements within the urban space. Additionally, analysis should be focused on the matrix component of the morphological system and on the potential flows and interaction patterns that they allow.

**- Qualitative analysis** should be performed as a contextual analysis in order to describe the spatial reality of societal change in inductive and deductive conclusions on urban morphology theory. The second part of this analysis will be perspective-based in order to find out the spatial possibility of future functions and the meaning of **urban patterns** in a qualitative structural analysis of current guiding principles within urban development using abductive conclusions. Finally, these two elements –spatial reality and spatial possibility –generate together into an instrumental concept for considering future urban transformation.

# WHY?
## GOALS

Having in mind that there are two initial problems in any research that aim to identify potential links between urban contextual factors and other variables of interest, methodological framework of **urban patterns** learning should challenge following questions: (1) how to quantify urban context at both social and physical levels, and (2) how to establish criteria for generating context-informed samples of urban areas.
- to introduce students with the theoretical discourse of the urban morphology,
- to introduce students with the phenomenon of morphological characteristics of the city,
- to understand complex consideration of key morphological features of urban spaces as well as their interdependence with functional characteristics and cultural context in which they are located,
- to understand the overall phenomenon of the city structure in morphogenetically way,
- to introduce students with the specifics of morphological characteristics of architectural and urban heritage entities thorough multiscale approach.

## TEACHERS' COMPETENCIES

Following the thesis of **urban patterns** notion that pattern is a model or landmark in respect to which the things and phenomena may be determined and in respect to which the order can be made inside a thing or among several things, a complex professional task is set for architectural educators primarily when it comes to the ability to understand order and hierarchy of different aspects and entities. In this sense, the special competencies of teachers in **urban patterns** education relate to

(a) *teacher profile 1*: knowledge deliverer and knowledge designer - working within multiple disciplines and strong understanding the relationship of architecture to urban morhology in order to provide the widest possible scope for multiscale decoding of **urban patterns**;

(b) *teacher profile 2*: skills enhancer – the ability to articulate the relationship between students' analytical thinking (both in quantitiative and qualitative analysis) and its representation through the intersection of visual methodologies (mapping and diagramming).

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- □ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
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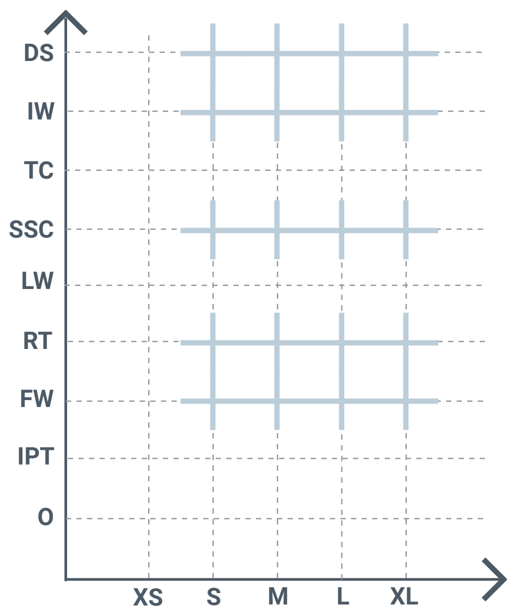


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- □ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- [ ] the needs and aspirations of building users;
- [x] the impact of buildings on the environment, and the precepts of sustainable design;
- [x] the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- [ ] the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- [ ] the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- [ ] the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- [ ] the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- [ ] the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- [ ] the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- [ ] the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
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- [ ] the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- [ ] principles associated with designing optimum visual, thermal and acoustic environments;
- [ ] systems for environmental comfort realised within relevant precepts of sustainable design;
- [ ] strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- [ ] critically examine the financial factors implied in varying building types, constructional systems, and specification
- [ ] understand the cost control mechanisms which operate during the development of a project;
- [ ] prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- [ ] the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- [ ] the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- [ ] the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## NOTION EXAMPLE

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Book Title:
- Urban typology: City square in Serbia

Author:
- Vladan Djokić

Year:
- 2009


Figure 1. Book Cover.



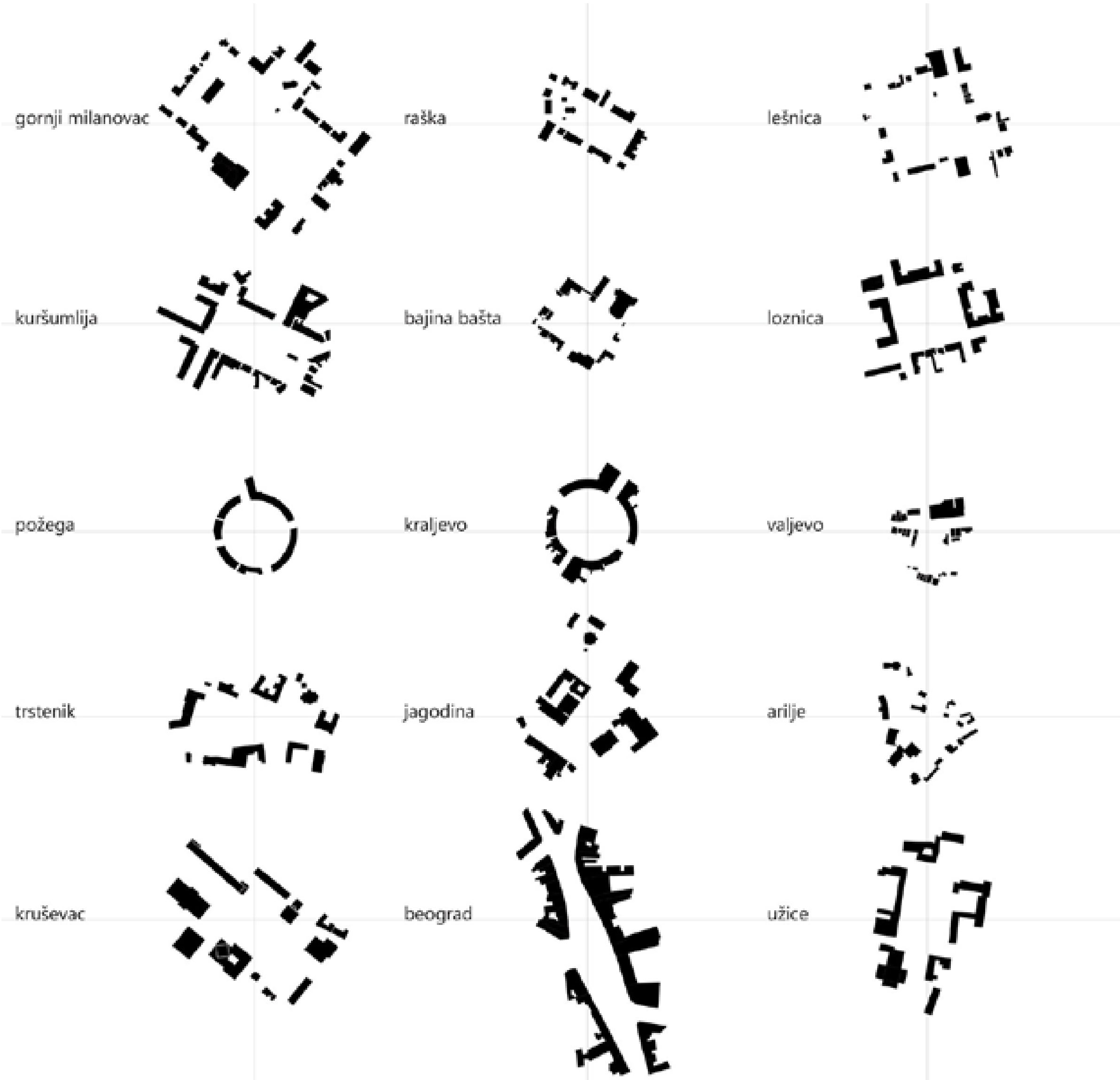


Figure 2a. City squares Form - Analysis - Serbia Case Study

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH


[1] Djokić, V. (2009a). *Urban typology: City square in Serbia*. University of Belgrade - Faculty of Architecture.

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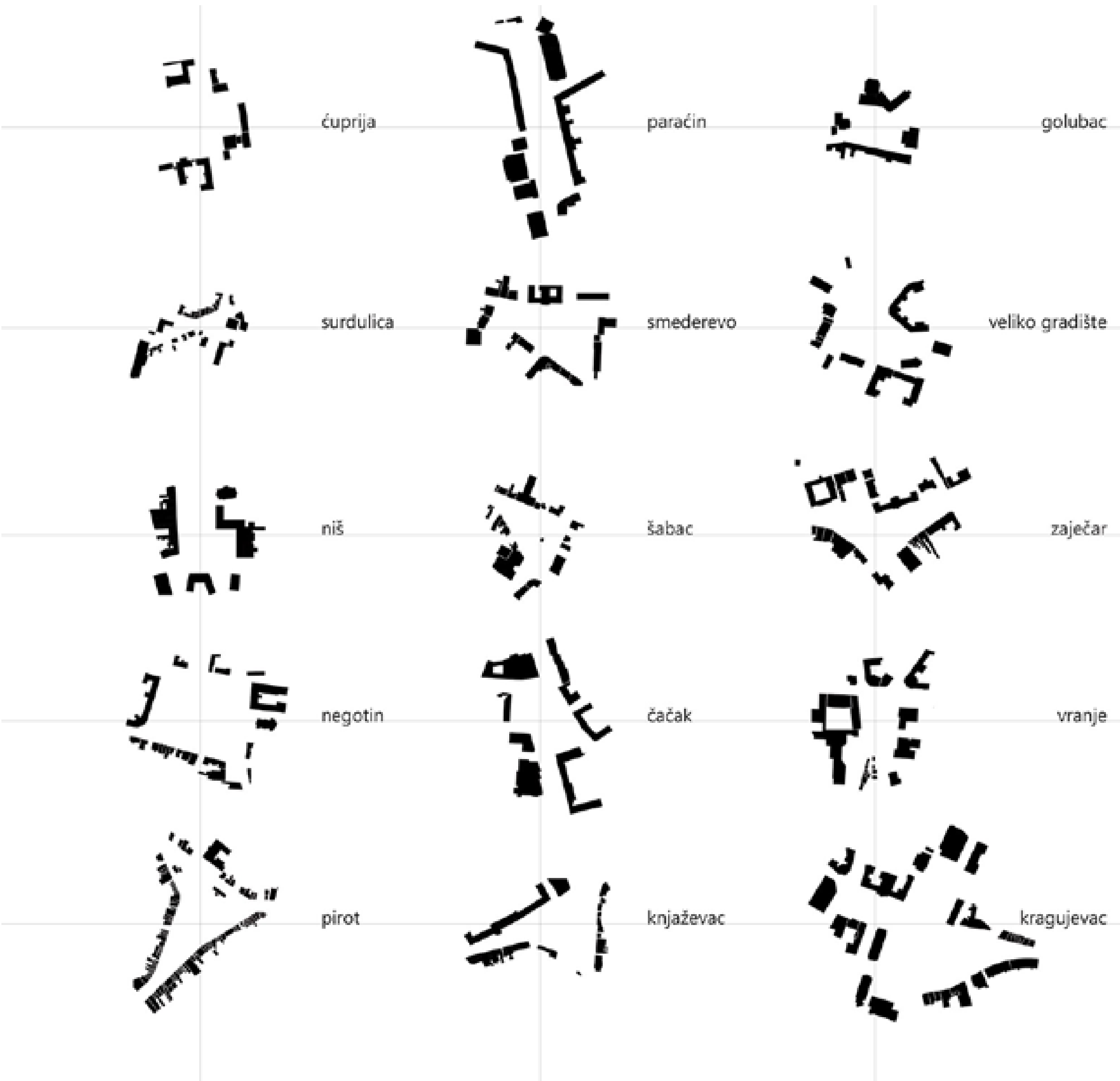


Figure 2b. City squares Form - Analysis - Serbia Case Study

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Sofoklis Kotsopoulos

05/09

**notions**

statements

# HERITAGE GENEALOGY

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*генеалогија наслеђа • Genealogia del patrimonio • γενεαλογία της Αρχιτεκτονικής Κληρονομίας • Genealogía Patrimonial*

## GENERAL DEFINITION/ EXPLANATION

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The notion of **Heritage Genealogy** is new and attempts to describe the in-depth analysis of historic buildings and sites, with the aim of redefining values and utilizing qualities in a restoration project. The term has its roots in the evolution of the subject of both history of architecture and restoration, according to which a timeless examination of heritage becomes necessary, based on the time sequence of historical periods and the ways in which one era influences the other.

The term applies to multiple fields. First, it is now a central issue for the study of the history of architecture, which goes beyond the mere description and understanding of phenomena, as it extends to the critical interpretation and re-evaluation of values of the past. On this basis, the term acquires a substantial application in the restoration of architectural heritage, which is largely guided by the theoretical results of research. Correspondingly, the contribution is multiple to the sustainability and protection of the built and natural environment, as in addition to the direct relationship with the preservation and reuse of a historic building, through the examination of **Heritage genealogy** emerges both historical and the sustainable components of heritage.

# WHAT?

## CONTENT

The course on notion **Heritage genealogy** can be central to a curriculum in architecture. First, it is the link between the history of architecture and the restoration of historic buildings and sites. Through this, the importance of history is understood, not only as a simple theoretical knowledge, but as a basic tool for the management of historic and existing structures in general.

The aim of the course would be to expand the history of architecture, examining the evolutionary course of types, forms and construction methods, within cultural, social and technological developments. Applying this knowledge to the analysis of a building, complex or site, creates the necessary background for the following restoration proposal. In addition, considering the bioclimatic functions of historic buildings (in elements such as orientation, view, physical properties of structural elements, such as masonry, frames, etc.), the connection to sustainability is direct and in fact a two-way relationship. Consequently, the knowledge that students acquire through the course, penetrates diagonally the cognitive objects, cultivating critical thinking and synthetic and combinational skills.

# HOW?

## METHODS

This is a course that in its general philosophy is multi-site. It is based on the theoretical knowledge of the history of architecture, but extends to the evaluation of values for the purpose of restoration.

The course will be developed mainly through theoretical lectures, which will briefly analyze the different periods of architecture and their particular characteristics. Next, the critical evaluation of Cultural Heritage will be necessary, which will shape the character of the intervention. In addition, the Sustainability analysis of the existing structural elements, but also the possibilities of energy upgrade of the shell, are part of the course. The aim of the course would not be exclusively the historical analysis, nor the recording of techniques, but a combination of theoretical knowledge, ideological composition, technical and technological training, as well as the cultivation of a critical attitude. The course will be a key resource for the evaluation of historic buildings and making an informed restoration decision, taking into account the technological, social and environmental parameters.

# WHY?

## GOALS

- Understanding the usefulness of the history of architecture and its applicability in the preservation of cultural heritage
- Expanding the scope of the history of architecture and its evolutionary process
- Emphasis on typological developments, at the level of building and residential units
- Emphasis on historical construction methods and their importance in Heritage and Sustainability
- International and national context, methodologies, policies and indicators adopted in the direction of the Restoration.
- Promoting an interdisciplinary approach in cultural heritage management in monuments, buildings, sites, historical centres, villages or suburbanised areas
- Creating understanding of some research-based principles for interdisciplinary communication by means of practical tools
- Introduction to restoration, key concepts and differences – conservation, restoration, redesign, reconstruction
- A global view of Historic building and sites analysis across Case Studies for **Heritage genealogy**
- Cultural Heritage and its impact on cities
- Cultural Heritage in the context of sustainability

## TEACHERS' COMPETENCIES

A teacher of the course should combine the field of the history of architecture and the restoration of historic buildings and sites. Knowledge of history should cover a wide range of historical periods. In addition, this knowledge should be extended to the way of dealing with the monuments of different periods, taking into account the cultural, social, technological and legislative parameters. The teacher should show particular fluency in the critical analysis and interpretation of architecture, not only through the theoretical background and research in the archives, but also through the findings in the field. It is important for him/her to be able to participate in the fieldwork and to inspire the students for the detailed investigation of the historical, architectural and construction elements. He/She is ultimately a teacher as a classroom actor, but also as a "site actor".

## COURSE TYPE

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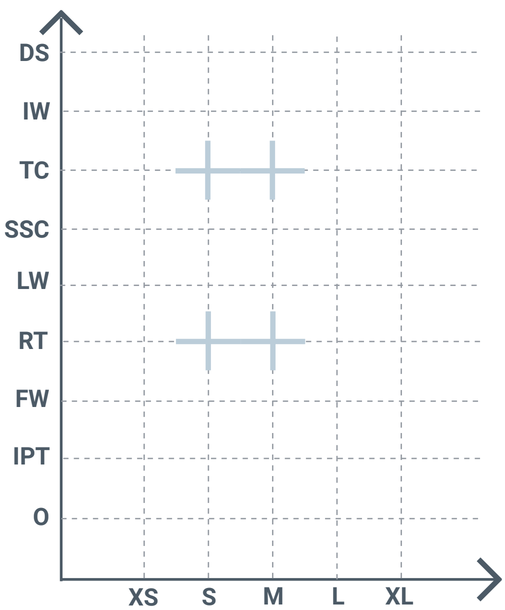


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- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- Restoration and creative reuse of a building block consisting of 13+ historic structures, in Plaka, Athens, to house the State Museum of Modern Greek Culture plus two more buildings on Kladou street, opposite to the building block

Authors:

- The restoration and rehabilitation project was carried out by the architecture office BETAPLAN / Ventourakis-Tavaniotis Associates / Gr under the supervision of the Ministry of Culture Directorate of Anastylosis, Museums and Technical Works

Year (period) of the project

- 2014

Figure 1. General Layout, Scale 1:500
*Credits: BETAPLAN / MNEP*

A typical example that highlights the importance of Heritage genealogy is the historical building block in the center of Athens, of the State Museum of Modern Greek Culture. The restoration study began with a detailed documentation of the 13 buildings. Buildings of the late Ottoman period, traditional vernacular town houses and neoclassical buildings compose a unique example of unobstructed continuity in the urban fabric of Athens in close proximity to the Acropolis. The entire site was thoroughly documented and surveyed before carrying out the restoration projects. This was followed by the evaluation of the buildings and the individual building systems. This process not only helped to better integrate the museum uses, but highlighted the historical, social, architectural and environmental values of the building stock.

Figure 2. Bird's eye view of the building block looking towards the Library of Hadrian and the Roman Forum
*Copyright: MNEP + Nikos Daniilidis*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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[1] Berkowski, P., Kosior-Kazberuk, M. (2016). Construction History as a Part of Assessment of Heritage Buildings. Procedia Engineering, 161, 85-90.

[2] Delegou, E., Mourgi, G., Tsilimantou, E., Ioannidis, C., & Moropoulou, A. (2019). A Multidisciplinary Approach for Historic Buildings Diagnosis: The Case Study of the Kaisariani Monastery. Heritage, 2, 1211-1232.

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[11] Zevi, B. (2018). Saper vedere la cita. Ferrara di Biagio Rossetti, «la prima città moderna d'Europa». Milano, Italy: Bompiani.

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Lourdes Royo Naranjo

06/09

**notions**

statements

# CULTURAL STUDIES, CULTURAL DIVERSITY

*студије културе, културни диверзитет • Studi Culturali, Diversità Culturale • Πολιτισμικές σπουδες, πολιτισμική διαφορετικότητα • Estudios culturales, diversidad cultural*

## GENERAL DEFINITION/ EXPLANATION

Heritage is the best reflection of the diversity and cultural richness of each country or territory. **CULTURAL DIVERSITY** is a principle that recognizes and legitimizes the cultural differences between various human groups, as well as the existence, coexistence and interaction between different cultures within the same geographic space. In relation to heritage, the CS-CD concept is intimately related to the meanings of identity and intangible heritage, being the consequence of different historical, political, social, economic and technological processes that have contributed in one way or another to the encounter of different cultures. At an educational level, **CULTURAL DIVERSITY** has promoted the recognition of what is foreign, as well as the exchange of knowledge and values between different groups of people who live in the same place.

**CULTURAL DIVERSITY** is considered by Unesco as a cultural heritage of great value that gave rise to the *Unesco Universal Declaration on Cultural Diversity* in 2001 and the subsequent *UNESCO Convention for Cultural Diversity*, approved on October 20 2005. Both documents reaffirm the intention to defend **CULTURAL DIVERSITY** as "an essential characteristic of humanity" and "common heritage" of it.

# WHAT?

## CONTENT

The concepts **CULTURAL STUDIES** and **CULTURAL DIVERSITY** have a double dimension. On the one hand, the social dimension stands out, and on the other its ecological dimension. The study of properly cultural aspects is reflected in heritage from the value of traditional architecture in the definition of relevant issues prior to the survey and documentation work as well as intervention for the conservation and restoration of inventoried and catalogued specimens. Said contents must be included in the learning process where the student must consider cultural heritage as one more resource to achieve sustainability, promoting strategies that incorporate concepts such as cultural diversity in historic cities based on their intangible and built heritage. It is about guaranteeing each country and each social group the possibility of participating in sustainable development. The new paradigm of heritage values the social dimension of cultural heritage as a new meaning in its permanent conceptual redefinition, shifting attention from the object to the subject or agent. This perspective is directly linked to the term **CULTURAL DIVERSITY** in sustainability keys.

# HOW?

## METHODS

The complexity of handling both concepts implies the development of different teaching learning methodologies such as: Problem-Based Learning (PBL), Service Learning (SL), Cooperative Learning (CL), lectures / expository method and case studies. The teaching-learning strategy used is one in which the student becomes the protagonist of the process at the same time that he acquires responsibilities and critically addresses the contents reflected in the subject, exchanging points of view and experiences with his classmates.

The learning activities will focus on the commitment to safeguard and promote living heritage through specific measures of awareness, information and communication of cultural diversity as a heritage reality of the place studied. The programmed activities are reinforced with readings of selected texts to understand the dimension of the concept and the approach, in addition to the implementation of critical thinking with the analysis of a specific case study in a specific city.

The theoretical-practical class should always be combined as a workshop, where other disciplines and other professionals are invited to share with the student their experiences in the implementation of the **Cultural Studies - Cultural Diversity** approach through its organization and training system for the practice in situ, defining a learning environment focused on the knowledge of the reality of the heritage site.

# WHY?
## GOALS

With the approval of the 2030 Agenda for Sustainable Development, the international community has recognized the fundamental role that culture plays as an engine of change and development. The achievement of its 17 Goals will not be possible without harnessing the strength and creative potential resulting from the diversity of cultures. In this way, working with students for the knowledge of **cultural studies and cultural diversity** offers not only the idea or notion of a heritage definition, but also allows working with tools for recovery, transmitting and developing traditional techniques and knowledge to through the analysis of representative testimonies in the field of traditional architecture and built heritage and in the consideration of the community and other disciplines in the identification of said sustainable development strategies.

## TEACHERS' COMPETENCIES

As this is such a complex term, the competences that should characterize the teacher should be very varied:
- Extensive knowledge of the concept on the part of the teacher
- Experience in its implementation (field work).
- Communication skills. To make the transmission of complex concepts easy
- Motivate the student to get involved in the task.
- Dynamize teamwork
- Facilitate the implementation of the concept in any context
- Be sensitive to the learning process in common with the learner

## COURSE TYPE

- [ ] Design Studio (DS)
- [x] Intensive Workshop (IW)
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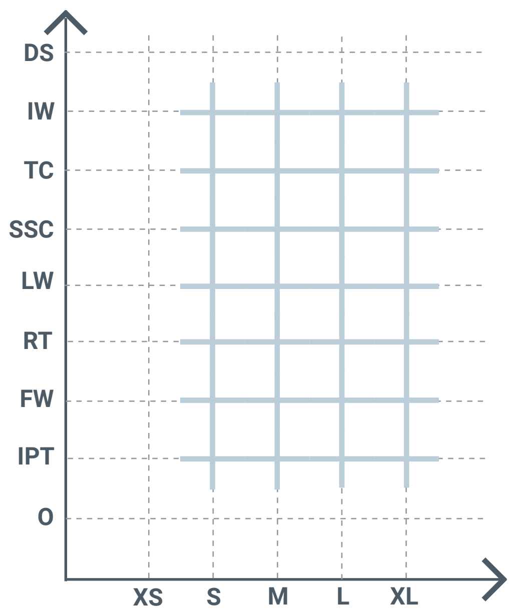


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**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- □ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
- PAX- Patio of Axerquía Project, historic center of Córdoba (Andalusia-Spain)

Authors:
- Carlos Anaya, Gaia Redaelli, Jacinta Ortiz

Year (period) of the project
- 2020

Figure 1. Visita del Consejo de Europa a la Cooperativa PAX Astronautas
*Credits: Carlos Anaya*

CULTURAL STUDIES offer the possibility of addressing diversity as a project strategy to reduce poverty and achieve the goal of sustainable development. With this intention, the PAX- Patio of Axerquía Project is highlighted, -in collaboration with different Andalusian associations and public institutions- which aims to encourage social innovation processes for urban regeneration in areas of high heritage value with relevant cultural identity, such as patios and old houses of neighbors scattered throughout the historic center of Córdoba (Andalusia-Spain). The project is part of the strategy to promote and encourage reuse in its prevalence of habitat and residential forms, characteristic of patio houses and houses of neighbors, which are those that have a greater relevance in the social and ecological character of the patios of Córdoba. These architectures are typologically protected and are the physical support of the Fiesta de los Patios, included in the Representative List of Intangible Cultural Heritage by UNESCO in 2012.

Figure 2. Imagen de la Casa PAX Astronautas antes de la obra
*Copyright: Gaia Redaelli*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Mladen Pešić

07/09

**notions**

statements

# CULTURAL IDENTITY

*културни идентитет • Identità Culturale • Πολιτιστική Ταυτότητα • Identidad Cultural*

## GENERAL DEFINITION/ EXPLANATION

**Cultural identity** is most certainly sociologically and ideologically constructed and in most cases it is part of person's self-conception and self-perception that is linked with nationality, ethnicity, religion, social or cultural class, or any other kind of particular group or identity. The concept of identity is ambiguous and it relates with the construction of a shared narrative that defines a community and differentiates them from others. At the same time culture provides diverse ways of interpreting the environment and the world, and given that identity explains and interprets the structure of the relationship between man, community and society, it can be said that identity is a kind of social mechanism of labelling and conceptualization that applies to individuals and groups and society as a whole. While conceptualising this notion in relation to the built environment it is important to observe them as two interlinked concepts (notions) that help man to evoke identity as an individual and social being. Planning and design of any built space should involve information about the activities and requirements of people who are going to use that space regarding their culture, traditions and customs. On that way cultural aspects and built environment are correlated in the process of mediating culture through spatial forms, typologies, spatial practices and representations, while creating relations between people and built environment. Built environment is therefore becoming the cultural negotiator with the ability to show itself as cultural signifier and representative. Llorenç Prats (2009) indicates that identity needs to be articulated in materiality, and heritage offers that "effective material and symbolic support for these narratives, both serving as a resource for the representation of identities and a place for its performance" (2009:1). Also according to Scheffler et al. (2009), the role of identity might follow two different perspectives; it can be seen as an "anchor" that provides continuity to development so identity is reinforced, or it is can be something that want to be changed because the "old identity is no longer productive", so identity is projected in an image that "serves as a marketing tool".

# WHAT?

## CONTENT

There are three basic facets or basic elements of any identity - contents, boundaries and contexts. Content is a basic element of any cultural identification. It has the explicit role of symbolizing or constructing a notion of the essential characteristics of a particular group or community. In fact, the content of identity is the corpus of knowledge when ideology institutionalizes and when it forms discourses. Boundaries are always important when examining this notion and there is always a selection of identity contents that a certain identity should establish in the political and cultural environment. The choice of boundaries itself depends on the context in which the identification process takes place. Although clearly set boundaries do not frame whole groups of specific culture, i.e. societies of identity. Quite the opposite, identity is always constructed in relation to other opposing identities. Identity is always constructed with the help of certain cultural contents and symbols, but always in relation to a specific context. This in fact means that identity is not defined only as a set of certain cultural material and content, but that the strategy of establishing differences in relation to another identity is an important part of defining identity. When exploring heritage and built environment it is important to examine the role of **cultural identity** and interconnection between identity and cultural heritage within this process because **cultural identity** as a notion contributes in creating the city's public image while highlighting transmitted traditional cultural features.

# HOW?

## METHODS

The ambition to view architecture and urbanism as the bearer of a certain identity first of all implies a departure from interpretations that understand them as an autonomous practice and discipline, closed system of meaning and value. It is very important to say that functional, stylistic, morphological, aesthetic and in general formal and poetic aspects of architecture that are shaped through history, theory of form, aesthetics and different interpretations, cannot be viewed outside the social, cultural and political context within which they were created. Architecture as a practice and discipline functions through a system of cultural identifications and is a socially sanctioned form of presenting and constructing knowledge. In this way, architecture determines and organizes the categorical order of reality. In that sense, the theorizing of architecture as the bearer of certain social identities presupposes a step out of focus, which is only interested in aesthetic, stylistic, functional-typological or technical aspects of architecture. It can be said that architecture is in fact a system of constructing circumstances that do not exist independently and that architecture does not actually depict, but constructs and legitimizes every social reality and every ideology.

As essential premises in the defining and research of identity, the several facts should be taken into account, that identities must be viewed as a process and not as a state, also as an interaction and through the interrelation between specific identity and context. In addition, the first challenge to the study of identity lies in the fact that each identity is, in a sense, the construction of the researcher/ reader who studies it. This means that a certain identity is not something that is characteristic of a specific community, but it is a theoretical analytical tool that is used in order to create knowledge, confirm ideological, political or some other ideas.

# WHY?

## GOALS

Each identity enables a social field to be organized and structured through culture, in such a way that the community within that field shares a certain system of values, beliefs and convictions. When studying identity, many theorists start from two mutually independent dimensions of identity - nominal and virtual, which, however, are not static but are subject to constant interaction. These two dimensions are united in the constant production and reproduction of identity and its boundaries. This means that built environment as an important segment of culture participates in the establishment of identity in the same way as political practice, philosophy, history, etc.. When it comes to identity, it must be noted that identity, as a rule, functions as a politically motivated knowledge that is always created within the institutional framework. In that case, these frameworks not only legitimize it, but also shape a concrete identity as socially comprehensible knowledge. In this context, architecture can be seen as an institutionalized regime of knowledge production, which is only one of the formation regimes of identity expression. In that case, architecture almost always intersects with other discourses, thus producing the same knowledge and power, through systems of communication, registration, regulation and archiving. At the same time, architecture as a discipline has an independent social position that allows the various cultural roles and identities it assumes to be set as more permanent structures in relation to the abstract ideological dimension presented by political theory and practice. Any "identity" as knowledge and as an ideological structure requires its own positive construction, which is built in culture, science, politics in the domains of the visual and thus in architecture.

## TEACHERS' COMPETENCIES

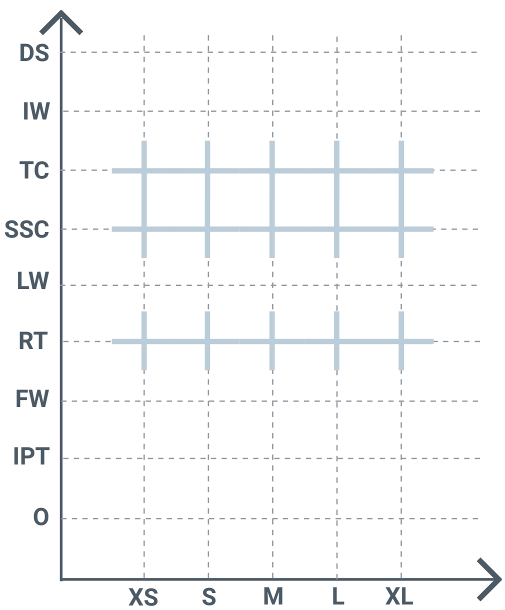
In this case teacher should have wide background in social sciences and humanities in order to comprehend the notion of **cultural identity**. Also it would be useful for the teacher to have understanding of spatial processes that are in connection with urban planning, urban design and architecture in general. Expert knowledge for particular subjects should be included but it should not be disconnected from general issues regarding the contemporary built environment.

## COURSE TYPE

- ☐ Design Studio (DS)
- ☐ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ■ Research Thesis (RT)
- ☐ Field work (FW)
- ☐ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ☐ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ☐ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ☐ theories of urban design and the planning of communities;
- ☐ the influence of the design and development of cities, past and present on the contemporary built environment;
- ☐ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- [ ] the needs and aspirations of building users;
- [ ] the impact of buildings on the environment, and the precepts of sustainable design;
- [x] the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- [ ] the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- [ ] the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- [ ] the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- [ ] the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- [ ] the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- [ ] the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- [ ] the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- [ ] strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- [ ] the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- [ ] principles associated with designing optimum visual, thermal and acoustic environments;
- [ ] systems for environmental comfort realised within relevant precepts of sustainable design;
- [ ] strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- [ ] critically examine the financial factors implied in varying building types, constructional systems, and specification
- [ ] understand the cost control mechanisms which operate during the development of a project;
- [ ] prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

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- [ ] the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- [ ] the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Relevant examples that are connected to the issue of cultural identity are at the same time numerous and a few, or none. Having in mind the complexity of this notion, its cultural capital and significance along with its fluid definitions and misinterpretations it is not convenient to select proper example. This notion should be carefully studied in order to prevent its misuse in the built environment and broader discussion of heritage.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Mauro Marzo
Viola Bertini

# 08/09
# notions
# statements

# CULTURAL ENHANCEMENT

*оснаживање у култури • Valorizzazione Culturale • Ανάδειξη Πολιτιστικής Κληρονομιάς • Fomento de la Cultura*

## GENERAL DEFINITION/ EXPLANATION

According to the *Codice Italiano dei Beni Culturali e del Paesaggio* (Legislative Decree 42/2004, art. 6) the **cultural heritage enhancement** "consists in the exercise of functions and in the regulation of activities aimed at promoting knowledge of cultural heritage and ensuring the best conditions of use and public enjoyment of the heritage itself, including by people with disabilities, in order to promote the development of culture. It also includes the promotion and support of cultural heritage conservation interventions. With reference to the landscape, the enhancement also includes the redevelopment of buildings and areas compromised or degraded subject to protection, or the creation of new coherent and integrated landscape values". Assuming this meaning for the concept of cultural heritage enhancement, a field of reflection of extreme relevance is outlined for the disciplines linked to the project in its various scales of application, in relation to knowledge actions, conservation methodologies, objectives of inclusive use and redevelopment strategies of building and places. The point of view of the architectural and landscape design represents a sort of lens through which addressing and circumscribing the vast theme of cultural heritage enhancement.

# WHAT?

## CONTENT

The transmission of knowledge on **cultural heritage enhancement** in relation to architectural design implies, on one hand, the ability to deepen the cultures and the techniques of architectural design discipline at its various scales, on the other hand, the use of a multidisciplinary approach aimed at the knowledge and interpretation, for design purpose, of issues addressed in other fields of knowledge, from archaeology to history, from geography to anthropology, just to quote few examples.

As for teaching, it should be addressed at understanding the notion of heritage, providing the tools trough which reading and interpreting the character and sense of places, reconstructing the physical transformations that have occurred to buildings, sites, and territories throughout history.

Project education, intended as a tool for **cultural heritage enhancement**, helps students to acquire awareness of the tangible and intangible values conveyed by cultural heritage and to develop the skills required to act on heritage through appropriate interventions with respect to the contexts balance.

# HOW?

## METHODS

The general teaching philosophy on **cultural heritage enhancement** in relation to architectural design should be set starting from theoretical lessons and structured on a design-based approach. The design experimentation at the architectural, urban or landscape scale, conducted by students and guided by the professor, offers the opportunity to develop an analytical-interpretative reading of places characterized by the presence of history and to acquire the tools necessary to design in heritage contexts.

The learning style should be set as a learning by design. Theoretical lessons are aimed at clarifying the concept of heritage and at showing significant examples of **cultural heritage enhancement** projects. The practical activities consist of design experimentation, conducted both in university architectural design studios, and in national or international design workshops. The latter – student-centred – imply, thanks to working-groups composed by students from different countries and the dialogue with professors from various schools – a learning method both vertical (teacher-student) and horizontal (student-student).

# WHY?
## GOALS

Higher Education teaching in relation to **cultural heritage enhancement**, through the architectural project, has as a main objective the transmission of the knowledge needed to design in heritage contexts.

The achievement of these skills is intended to prepare architects capable of developing projects appropriate with respect to the character of places and aimed at responding to the needs posed by the **cultural heritage enhancement**. In particular, students will learn how the project of the new can relate to the old and how the architectural project, at its various scales, can: contribute to the knowledge of heritage and to the transmission of its underlying values; facilitate the use of heritage from an inclusive perspective (design for all) and, at the same time, carry out safeguarding actions. This starting from acquiring the awareness that heritage, to maintain this status, must not be exclusively protected, but also understood and enjoyed and thus transmitted to future generations.

## TEACHERS' COMPETENCIES

The transmission of knowledge on the concept of **cultural heritage enhancement** through architectural design requires solid skills in the discipline of architectural and urban composition; the ability to design at different scales - from the architectural scale to the landscape one - and a background of theoretical knowledge on the concept of heritage (knowledge, use and protection). Important is the capacity to teach the designing operations needed to strengthen the relationships between heritage assets and context.

The integration of different disciplines and skills - architectural design, history, restoration, sociology, economics, etc. - can contribute to provide a broader framework of knowledge, extending the view from the cultural heritage valorisation accomplished through architectural design to the broader notion of cultural enhancement.

## COURSE TYPE

- ■ Design Studio (DS)
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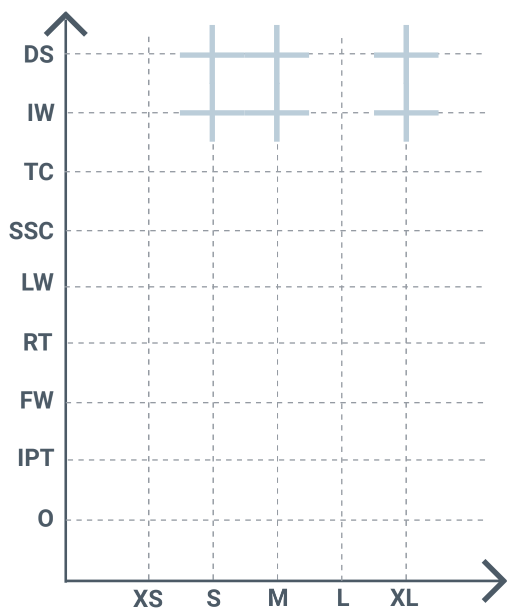


## LEARNING OUTCOMES

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- □ strategies for building services, and ability to integrate these in a design project.

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- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
- The Madinat al-Zahra Museum, Cordoba

Authors:
- Nieto Sobejano architects

Year (period) of the project
- 2009

The Madinat al-Zahra Museum, accomplished in Cordoba in 2009 by the architects Nieto Sobejano, represents an interesting example of cultural heritage enhancement. The work is located near the Spanish-Arab city of Madinat al-Zahra, but in an appropriately spaced position from the old settlement. The ruins of the ancient city and the new museum thus wave a dialogue in the landscape, inhabiting that space and time hiatus which separates and connects them. As in a chess game, also in this project the first move – the architects' choice of creating a partially underground building – is decisive with respect to the results. The reduction of the visual impact of the architecture in the landscape is associated with a clear reference to the archaeological excavation action. The planimetric configuration, articulated around inward patios, also alludes to the fabric and spaces of the Arab city. Thanks to these choices, the design of the Museum becomes a vehicle for knowledge and understanding of the site and its history, favouring its use and cultural valorisation.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Università Iuav di Venezia

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Marco Chiuso

09/09

**notions**

statements

# CULTURAL HERITAGE

*културно наслеђе • Beni Culturali • Πολιτιστική Κληρονομιά • Patrimonio Cultural*

## GENERAL DEFINITION/ EXPLANATION

The Unesco definition of the **Cultural Heritage** consider tangible and intangible values, it doesn't comprehend only the monuments and collections of objects but it also includes traditions or “living expressions of ancestral culture”.
According the *Codice Italiano dei Beni Culturali e del Paesaggio* (Legislative Decree 42/2004, art. 2), **Cultural Heritage** consists of both Cultural and Landscape assets. Cultural assets comprehend immovable and movable goods with artistic, historical, archaeological, ethno-anthropological, archival and bibliographic interest or other goods with civilization value. Landscape assets collect all traces and expression of historical, cultural values and the relationship with the natural, morphological and aesthetic aspects of the territory. All these elements are material traces of the intangible values related to culture and tradition.

# WHAT?

## CONTENT

The "*Convention Concerning the Protection of the World Cultural and Natural Heritage*" (1972) presents identification, protection, conservation, presentation and transmission to future generations as central themes concerning **Cultural Heritage**.
The identification of methods to deeper understand the knowledge on **Cultural Heritage** implies, on the one hand, the ability to identify the assets at various scales and, on the other hand, the use of a multidisciplinary approach aimed at the knowledge and interpretation, for protection, conservation, presentation and transmission purpose, of assets from various fields of knowledge, such as arts, archaeology, history, geography, anthropology, archival and bibliography.
Education on **Cultural Heritage** helps students to wider perspectives about cultural heritage identification, conservation, and enhancement.

# HOW?

## METHODS

The general teaching philosophy about **Cultural Heritage** should involve an interdisciplinary approach to the past evidence, natural and cultural issues and be led by critical and theoretical components.
The learning styles should include ex-cathedra lectures, practical activities and seminars with invited lecturers.
Ex-cathedra lessons focus on the theoretical aspect through the critical analysis and interpretation of international theoretical frameworks, charters, and national legislation.
Practical workshops and field activities are useful for transmitting to students the tools to process social survey data, such as interviews for defining the evolution of cultural values over time and identifying the elements we inherit as **Cultural Heritage** from the past.
Seminars are helpful tools to present various emblematic case studies and critic them with experts.

# WHY?
## GOALS

Higher Education teaching in relation to **Cultural Heritage**, assuming the *Codice Italiano dei Beni Culturali e del Paesaggio* (Legislative Decree 42/2004, art. 2), has as main objective the "adequate cognitive activity" to identify the assets constituting the Cultural Heritage and their protection and conservation "for purposes of public use and future generation understanding". Architectural and Urban Design Higher Education programmes have to promote the awareness of **Cultural Heritage** (tangible and intangible instances) to guarantee the protection and the transmission to the future of the different historical, cultural traces and traditions of the past societies.

## TEACHERS' COMPETENCIES

The knowledge transfer of **Cultural Heritage** needs an interdisciplinary and multi learning approach.

The lessons to be effective in the transmission of cultural, theoretical, and social aspects should consider:
- the clear presentation of learning outcomes and outcomes verification;
- the sharing of teaching material on the theoretical framework;
- the stimulation and motivation interest in the issues introduced.

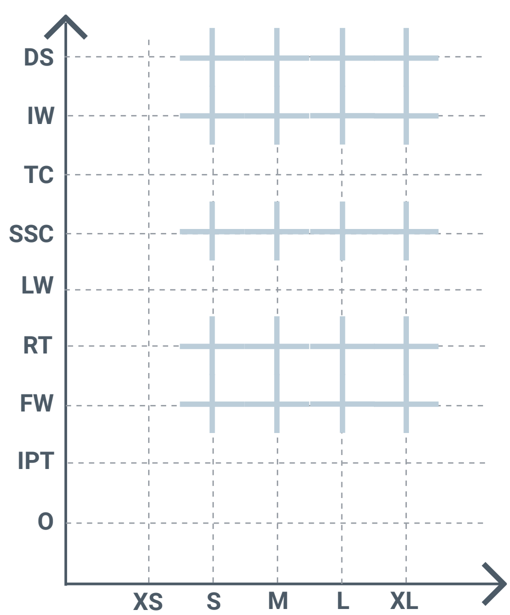
To achieve a high level in learning outcomes and students comprehension of the topics, it can be helpful that the teacher is available for clarifications and explanations.

## COURSE TYPE

■ Design Studio (DS)
■ Intensive Workshop (IW)
□ Theory Course (TC)
■ Seminar (short comprehensive) (SSC)
□ Laboratory work (LW)
■ Research Thesis (RT)
■ Field work (FW)
□ Internship Practical training (IPT)
□ Other (O)

## SCALE

□ Construction Detailing and Interior Design Scale (XS)
■ Architecture: Buildings Scale (S)
■ Urban Design Scale (M)
■ Urban and Regional Planning Scale (L)
■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;

□ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;

■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;

■ the influence of history and theory on the spatial, social, and technological aspects of architecture

■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

■ how the theories, practices and technologies of the arts influence architectural design;

■ the creative application of the fine arts and their relevance and impact on architecture;

■ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

□ theories of urban design and the planning of communities;

■ the influence of the design and development of cities, past and present on the contemporary built environment;

□ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- □ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- □ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
Decorative accessories and surfaces restoration design plan" of Cafè Florian in Venice

Authors:
Valeriano Pastor e Barbara Pastor

Year (period) of the project
2003-2009

The "Decorative accessories and surfaces restoration design plan" of Cafè Florian in Venice helps to understand the importance of cultural heritage. Cafè Florian is the most significant Historical Cafè in Venice, situated on the ground floor along the portico of the Procuratie Nuove.

The Decorative accessories and surfaces are part of the public image of Caffé Florian, where historical urban events took place during the last century and a half. The state of decay is permanent, and the restoration activities and operations need to be compatible with continuity in the service of the Coffee. The project included an operative schedule corresponding to customer attendance: the most relevant moment of the work activities was the "declaration of opening for restoration".

https://archiviovenetoedificirestaurati.it/caffe-florian-21.html

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# HERITAGE TYPES

Modern Heritage

Industrial Heritage

Vernacular Heritage

Performative and Affective Heritage

Tangible and Intangible Heritage

Cultural Landscape

Urban Heritage

Monumental Heritage

Emerging Heritage

Documentary Heritage

Archaeological Heritage

Heritage Sites

Natural Heritage

Military Heritage

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Mar Loren-Méndez

# 01/14

## heritage types

statements

# MODERN HERITAGE

*савремено наслеђе • Patrimonio Moderno • Νεότερη Κληρονομιά • Patrimonio Contemporáneo*

## GENERAL DEFINITION/ EXPLANATION

**Modern Heritage** is defined by UNESCO as the "Architecture, Town Planning and Landscape Design of the 19th and 20th Century," that is to say, of the modern era or the last two hundred years approximately. In the 1994 World Heritage Committee meeting, UNESCO adopted a global strategy for a credible, balanced and representative World Heritage List. Together with a geographical balance, a pro-active approach was also taken with regard to the identification and documentation of less-represented categories of heritage for inclusion on the List. In this context, in 2001 the UNESCO World Heritage Center, together with ICOMOS and DOCOMOMO International started the **Modern Heritage** Program, with the goal of identifying and listing **modern heritage**. It is important to take into account that this term is also used to refer to the architectural and cultural heritage of the Modern Movement and, in a more inclusive approach, modern architecture of the 20th century.

# WHAT?

## CONTENT

Despite the fact that Humanity has built more in the last 200 years than in the rest of its long history, this built heritage is little known and valued by society and institutions, and in danger of deep transformation and disappearing. In 2003 UNESCO confirmed that the category of **Modern Heritage** is underrepresented in the World Heritage List, pointed out its vulnerability due to weak legal protection and low appreciation among the general public and institutions. In 2017, UNESCO recognized that **Modern Heritage** is still underrepresented.

Culture and heritage has become in the last years the driven force for urban sustainable development, **Modern heritage** being an integral part of the built environment, its reuse and regeneration constitute key issues for sustainable cities: UNESCO confirmed its identification, characterization and legal protection is starting to build momentum.

**Modern heritage** is also an integral part of many urban ensembles, which represent a majority of sites on the World Heritage List- pointing out that urban heritage depends on the integrity of this type of heritage. This means that it is crucial to integrate **Modern Heritage** in architectural curricula, both to assure awareness and an active role on protection of the new generations but also as a real professional opportunity.

# HOW?

## METHODS

Learning-teaching general principles

A) From teaching to learning perspective: the program is rooted in the central role of the student, proposing a classroom strategy driven by intensive participation and based on a symmetrical dialogue student/teacher.

B) Critical and autonomous development of the student

C) Creativity and integrity of the architectural design process: documentation and historical research, to values assessment and regeneration sustainable strategies.

The method should integrate training activities theoretical and practical. The practical dimension of the course is based on the problem based learning, based on case studies.

1. International case studies on sustainable **modern heritage** intervention. Each team works on one author/text and its architectural and urban proposal for sustainable development. The method combines the case study method with gamification for team learning and self-evaluation. Each team designs a participatory creative action in order to assure and valuate the learning process.

2. All the teams work on a local **modern heritage** cases of the same city/territory such as Seville. Each team develops a documental research and heritage characterization, which leads to the identification of values, the information on its protection, and the design of creative strategies for the regeneration of the city. The pedagogy integrates workshops (preparation in dialogue student- professor) and expository-participatory activities, developed and coordinated by the students themselves.

# WHY?

## GOALS

- To address Modern heritage documentation, assessment and intervention as a key factor for a sustainable urban development
- To develop an interdisciplinary, complex and multiscalar approach to Modern heritage -the architecture, the city and the territory- integrating the different disciplines with architecture.
- To address architectural history and criticism of Modern heritage as a cultural manifestation, within the complex and interdisciplinary framework of geopolitical, economic, technological and social transformations (Cultural complexity and interdisciplinarity)
- To develop awareness of architecture, urban design and landscape of the 19th and 20th century and develop its appreciation as heritage of our built environment.
- To integrate creativity with scientific methods in all the phases -from documentation and historical research, to values assessment and design strategies. In a field in constant reformulation such as heritage studies, creativity allows the student to constantly adapt to emergent heritage -such as the potential modern heritage- and sustainable theories

## TEACHERS' COMPETENCIES

- Solid and updated knowledge and research/transference experience on the field of heritage of the built environment in general and on Modern Heritage in particular, both in its conceptualization and methodological tools.
- Critical and open thinking.
- Transversal approach to the course, unveiling both the contents connections and potential application to other courses and disciplines.
- Capacity to participate in an honest horizontal and symmetric learning-teaching process, prepare to learn with the students within a process of lifelong learning.
- Knowledge and collaboration with the institutional, professional and society stakeholders involved and committed with heritage. Capacity to open up this network to the students, and transmitting the professional potential of this specific training.
- Capacity to integrate creativity and its integration with rigorous heritage research, assessment and intervention proposals.
-Interdisciplinary and cooperative attitude towards the complexity of heritage. Holistic approach to Modern heritage.
- Familiarity with the different visual media and technology in order to reach optimum and integral ideas communication, both in the academic environment and with the rest of institutions and society.
- Vocation and commitment with Modern heritage, conviction that its assessment and regeneration is key for sustainable development.

## COURSE TYPE

- [ ] Design Studio (DS)
- [x] Intensive Workshop (IW)
- [x] Theory Course (TC)
- [ ] Seminar (short comprehensive) (SSC)
- [ ] Laboratory work (LW)
- [x] Research Thesis (RT)
- [x] Field work (FW)
- [ ] Internship Practical training (IPT)
- [x] Other (O)

## SCALE

- [ ] Construction Detailing and Interior Design Scale (XS)
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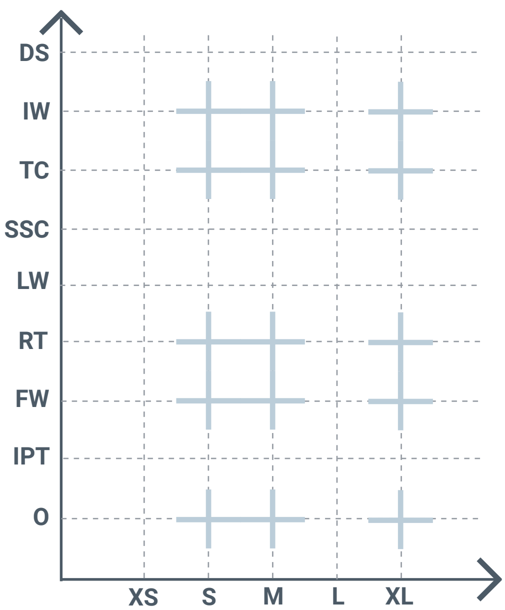


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [x] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [ ] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [ ] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [x] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [x] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [ ] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

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- [ ] how the theories, practices and technologies of the arts influence architectural design;
- [ ] the creative application of the fine arts and their relevance and impact on architecture;
- [x] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

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- [ ] theories of urban design and the planning of communities;
- [x] the influence of the design and development of cities, past and present on the contemporary built environment;
- [x] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

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- □ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
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- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
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- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
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- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- El Caminito del Rey (King's Path) Recovery of King's Path, Gaitanes Gorge; Paraje Natural Desfiladero Natural de los Gaitanes (Álora, Antequera, Ardales)

Authors:

- Luis Machuca y Asociados, S.L.P

Year (period) of the project

- 1901-1905 El Caminito del Rey was built; 1904 Aqueduct Bridgde; 2014-2015. Renovation/Resto-ration Project

Figure 1. Aerial view of the two footbridges
*Source: Juan María. Source: Luis Machuca y Asociados, S.L.P.*

The original Project consists of a service road and aqueduct bridge linked to the construction of the Conde de Guadalorce dam and a hydroelectric dam station for both workers for control and maintenance of the canal and local inhabitants for connecting the different nearby villages for different services (it is then industrial, agricultural and commercial Modern Heritage)

The path was built at the beginning of the last century in 1901-1905 with the intention of having control and maintenance of the canal and also to give access to the workers from the Conde de Guadalhorce dam to the hydroelectric power station of El Chorro. Thus, the workers and their families living in the settlement El Chorro avoid the long way through the sierra. It was constructed as an infrastructure linked to the industrialization of this Andalusian territory at the south of Europe. Once it lost its industrial relevance at the end of the 20th century, it has remained in ruins due to the action of nature itself, the passing of time and vandalism.

However, its protection has traditionally been linked to their natural values: the Desfiladero de los Gaitanes Natural Park, declared by the Junta de Andalucía. Furthermore, this site belongs to Natura 2000: European ecological network of biodiversity conservation areas, as evidenced by its declaration as a Special Area of Conservation (SAC) and Special Protection Area for Birds (SPA). In 2006 a first technical report was presented to the Andalusian Government regarding its architectural and cultural values linked to its modern heritage. It is not until 2019, the Caminito del Rey is starting to prepare its candidacy to become a UNESCO World Heritage Site.


Figure 2. Location Map. Source: Machuca Santa-Cruz, Luis (2016). "Recuperación del Caminito del Rey". Author: Luis Machuca y Asociados, S.L.P. *Source: Machuca Santa-Cruz, Luis (2016). "Recuperación del Caminito del Rey". In: Arquitectura Viva.*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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USE

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Enrique Larive López

02/14

**heritage types**

statements

# INDUSTRIAL HERITAGE

*индустријско наслеђе • Beni architettettonici e culturali rilevanti per la storia dell'attività industriale • Βιομηχανική Κληρονομιά • Patrimonio Industrial*

## GENERAL DEFINITION/ EXPLANATION

As a starting point, we assume the definition of **Industrial Heritage** as that established by the National Plan for Industrial Heritage: "By **industrial heritage** we understand the suite of movable and immovable assets and sociability systems associated with the working culture generated by the extraction, transformation, transport, distribution and management activities of the economic system that emerged from the "industrial revolution". These assets have to be understood as an integral whole comprised of the landscape in which they stand, the industrial relations that structures them, the architectures that characterise them, the techniques used in their procedures, the archives generated during their activity and their symbolic practices".

In the 21st century we are confronted by new challenges with respect to research, protection and the activation of heritage. The ever-stronger bonds between **natural heritage** and cultural heritage, between movable and immovable heritage, between tangible and intangible heritage, between object and context, between specialized technical management and citizen participation, between rural and urban, between local and urban, between local and global, between singular and generic, between concentrated and dispersed, all makes us think that we find ourselves before a new patrimonial border.

# WHAT?

## CONTENT

**Industrial Heritage** needs to be thought about from a renewed approach, capable of becoming a platform for transdisciplinary action given the complicated variables that affect places of work, among which we can highlight the following: The conflicts and synthesis that are produced between different socioeconomic models, machines and nature; The evolution and dynamism of the territory in which constant changes occur and affect the morphology, structure, property and character of the land; The variability and the multiplicity which in its scale and location, characterize spaces of production and its models of exploitation; The widening and rupture of conventional administrative limits, as much a product of industrialisation as of globalization; Diversity versus uniformity which sometimes exists as a juxtaposition in places of work, thus evidencing the contradictions of standardisation; The lack of consensus for the establishment of valid indicators that serve to define the values and attributes for the protection of industrial property; Different and contradictory intervention cultures that trace a panorama of uncertainty in which numerous industrial properties find themselves; Participation and good practices as a guarantee of the adequate orientation of governing models as inequality correctors for **industrial heritage**.

On its own, **Industrial heritage** has the capacity to form a monographic study programme, as it allows historical studies, fieldwork and projects to be carried out, but also to form part of other programmes due to its transversal nature: historical, architectural, urban, landscape.... For this, it is essential to know different research and intervention techniques linked to heritage, sustainability, history, urban planning and knowledge of materials, as well as acquiring group work and interdisciplinary skills, which are compulsory for studying, analysing and working on this type of heritage. The student finally obtains the ability to develop an integral process, in which construction and economics are also present, both conceptually and instrumentally.

# HOW?

## METHODS

The appropriate teaching strategy is one in which the student is the main character of the learning process, where in addition to acquiring responsibilities and critically approaching the contents provided in the subject, he/she exchanges points of view and experiences with his/her classmates. The study of **Industrial heritage** allows the promotion of different methods that combine: Problem-Based Learning (PBL), Service Learning (SL), Cooperative Learning (CL), lectures / expository method and case studies. This is the framework within which the learning of this programme is proposed, which is the result of combining different methodological strategies, each one is chosen according to the contents, teaching objectives and competencies to be developed. They are given various training activities, combining individual work with group work, using international examples but also local examples close to their real context. Among the strategies used are: Critical intervention: industrial architecture and landscapes. The impact of generalizing architectural and landscape intervention practices in industrial spaces has given cause to consider revising intervention criteria in order to establish a consensual framework in which it is possible to conciliate the conservation of their values, activate their potential, and provide sustainability for the project alongside the diversification of new uses. Review of categorisation: transversality as a methodology and ICTs. ICTs offer the possibility to establish a new, comprehensive registering model that combines documentation and necessary strategies for characterisation, assessment, protection, diffusion and management, from a transversal methodology that further includes perceptive and participative dimensions. Visualizing the forgotten: work has a gender. The current focus from the perspective of gender as a space of thought that rescues the invisible role of women in business, entrepreneurial, technical and labour tasks must be transferred to current research, diffusion and methods for the recuperation of testimonies concerning **Industrial Heritage**. Ordering the territory: the geography of Industrial Heritage. The diversity of geographical frameworks in which testimonies of industrial heritage are interlocked, and the different interests of socioeconomic agents that interact in these areas demands of us that we identify logical territories, environments and the impact of urban and regional planning. Interpreting obsolescence: concepts, stories and formats. The unstoppable accumulation of material deposits and immaterial testimonies of industrial culture derived from the historical acceleration produced since the first Industrial Revolution and the vertiginous and inherent obsolescence of the current economic system, requires the renovation of conservation, museological and museographic systems. Participation is inclusive: patrimony has no owner, it belongs to everyone. The generation of a new model of society that is more open and participative with respect to issues that affect cultural patrimony and its landscapes demands of us that participatory models, in the case of **Industrial Heritage**, are designed to favour processes of social appropriation by the communities and entities that make up the surroundings of industrial properties and goods.

# WHY?

## GOALS

Through the study of this type of heritage, students learn the historical and cultural knowledge necessary to carry out diagnoses and heritage assessments of architecture, the city and those territorial elements that take part of the landscape. Likewise, due to the characteristics of **Industrial heritage**, students will be able to structure and apply the theoretical, critical and instrumental elements of the preliminary studies necessary for architectural interventions for the rehabilitation of built heritage. In addition, students will become aware that heritage and culture are current resources that contribute to local development and the local economy, and are therefore considered key elements of urban, economic and social sustainability.

**Industrial heritage** is perfectly associated with some key concepts in the learning/teaching process: cultural complexity and interdisciplinarity, the multiscale condition of the city, sustainable urban development; heritage as an element for urban regeneration, heritage and new technologies or the binomial creativity and scientific methods.

## TEACHERS' COMPETENCIES

The unique characteristics of **industrial heritage** (historical background, interdisciplinary nature, architectural and urban presence, complexity of adaptation to the needs of the 21$^{st}$ century...) require a teacher with multiple profiles. Of course, he/she must know the subject, but he/she must also encourage reflection and show him/herself as a learner in the classroom, thus establishing a horizontal relationship with the students.

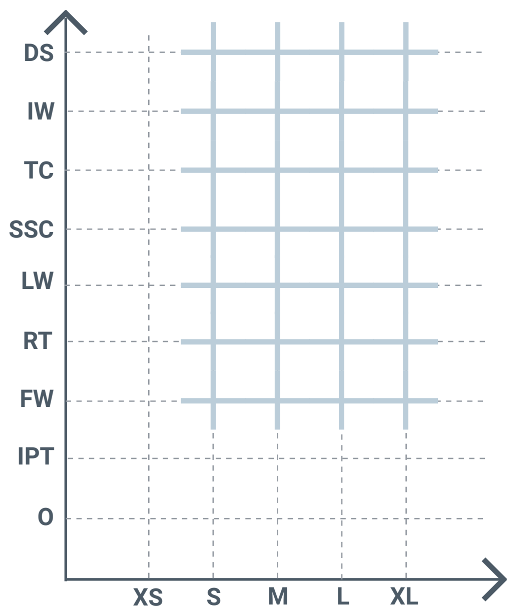
The teacher must encourage different types of learning methodologies for such a heterogeneous heritage, facilitating the use of different techniques and knowledge from different points of view. The teaching/learning process should not focus on solving a specific case, but on providing sufficient tools and knowledge to face the study, analysis and intervention in a highly complex heritage.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- ☐ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ☐ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ☐ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ☐ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ☐ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ■ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ☐ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ☐ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- □ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- □ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ■ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
- Rehabilitation of the Former Pottery complex Santa Ana as the Pottery centre of Triana

Authors:
- AF6 ARCHITECTURE

Year (period) of the project
- Competition 2009-Opening 2014

Figure 1. Previous state and archaeological excavations
*Source: AF6 Arquitectura*

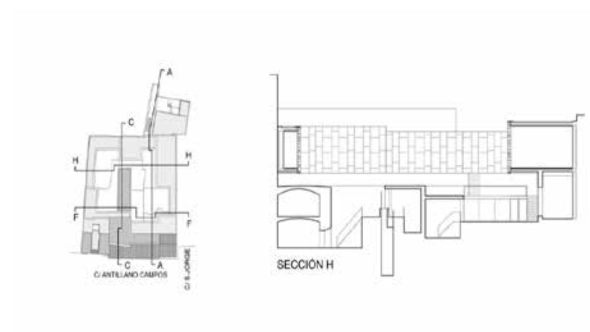



Figure 2. Section and plan after the reconstruction
*Source: AF6 Arquitectura.*

The old factory remained in use until the end of the 20th century. This situation has allowed the elements that make it up to be found mostly complete and located in their original context: seven ceramic firing kilns, water wells, mills and pigment deposits, workshops and storerooms. During the archaeological excavations carried out, the remains of another eight kilns were found, the oldest of which was used until the end of the 16th century. Two of them have been integrated into the project. The old factory cannot be seen from the street and it is hidden behind the buildings that make up its urban image.

The complex is the result of a historical process in which the colonization of the interior space is based on solving the needs that have arisen: manufacture, expand, house, store, modernize. The project is conceived as another process, from a contemporary point of view, which highlights this coexistence. The Pottery centre of Triana intertwines with the complex fabric of the Triana suburb, generating an inner urban landscape of great spatial richness. The new constructions adapt their height and shape to that of the existing buildings in the complex. The project is not intended to be a visual reference point from the outside that alters the profile of Triana. There is no façade. The complex will be like a gift, which is discovered when we enter it. The building is organized on the ground floor as a continuous route, like a walk between the kilns of the pottery complex. The pottery production process is narrated using original elements from this pottery kiln inserted in their original context. A labyrinthine route is proposed between the pottery kilns and the old spaces of the factory that tell the visitor how pottery was produced in Triana. We work through an archaeological methodology without erasing temporary traces of the small memory of the spaces (smoke, disorder, chance, bricks, wood, ashes) that form part of the heritage.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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University of Cyprus

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Maria Philokyprou

03/14

**heritage types**

statements

# VERNACULAR HERITAGE

*вернакуларно наслеђе • Beni architettonici e culturali rilevanti per la tradizione rurale • Παραδοσιακή Κληρονομιά • Patrimonio Vernáculo*

## GENERAL DEFINITION/ EXPLANATION

**Vernacular heritage**, also referred to as traditional, anonymous, native or indigenous to a specific time and place, is the architecture of the people. It is related to the environmental context and available resources, it is customarily owner or community built, utilizing traditional technologies and local materials. All forms of vernacular architecture are built to meet specific needs, accommodating the values, economies and ways of life of the cultures that produce them (Paul Oliver 1997). Vernacular dwellings, throughout the years, have been continually reused, adapted to the local conditions and survived as cultural testimonies providing a direct link with the past. The satisfaction of human needs with simple means, the use of traditional local materials and available resources, as well as the incorporation of environmental design principles, give them a sustainable identity. According to ICOMOS *Charter on the Built Vernacular Heritage* (1999), "*Vernacular building is the traditional and natural way by which communities house themselves*".

The term *Vernacular* (Tom Porter 2004) refers to the language or dialect of one's native country, while its use in heritage / architecture is concerned with everyday ordinary buildings. Vernacular describes a traditional language of building, usually of unknown authorship, constructed from local materials to suit their native setting, indigenous climate, and specific local needs. Being built from locally available materials, such as stone, clay, timber and thatch, vernacular buildings make little reference to mainstream style or to any prevalent theories of architecture.

Vernacular architecture still plays an active role in contemporary society as it includes tangible and intangible values and responds to the socio-economic and cultural character of societies. Its authenticity relates not only to its materiality and fabric, but also to the way it is used. It is characterized by environmental adaptation in terms of local climatic conditions and topography, as well as by the use of local materials with low embodied energy and thus minimum environmental footprint. In addition, it incorporates many bioclimatic features and provides a pleasant environment for the occupants (Philokyprou et al. 2017, 2020).

Nowadays, it is widely acknowledged that **vernacular heritage** can serve as a paradigm for sustainable development in the future, as it has survived over time and may stand as a testimony of human coexistence with nature. Thus, the incorporation of this heritage in the university courses is important. It should be mentioned that **vernacular heritage** encompasses not only the built environment but also intangible aspects, such as building techniques, lifestyles, territorial connections and transmission of skills from one generation to the next, which are intrinsic to communities.

# WHAT?

## CONTENT

This term (**vernacular heritage**) is frequently found in education, as a variety of courses in university programs deal with **vernacular heritage**. This type of heritage is a very important part of the architectural heritage that bears unique tangible and intangible values. Today, a great part of the building activity takes place in vernacular environments while architects are often called upon to provide solutions in order to reuse existing vernacular dwellings.

Vernacular architecture is very important in an educational perspective as it responds to the socio-economic and cultural character of societies. It is characterised by environmental adaptation in terms of local conditions, as well as by the use of local materials with low embodied energy and thus minimum environmental footprint. In addition, it incorporates many bioclimatic features providing pleasant and comfortable living conditions for the occupants (Philokyprou et al. 2017). The detailed study as well as the reuse of vernacular dwellings has a very positive impact on the development of local economies, as it generates local labour demands, and, at the same time, safeguards the cultural identity. The reuse of **vernacular heritage** covers the three aspects of sustainability; i.e. environmental, economic and social, a fact that renders it an extremely sustainable method of development (Philokyprou et al., 2020).

Through the learning process students can acquire the following skills.

# HOW?

## METHODS

A course related to **vernacular heritage** often includes analysis of vernacular settlements and dwellings with reference to to-days situation. An in-depth study with regard to the typology of dwellings and the social, economic and climatic elements which influence their form and construction is essential. In addition, the main theoretical principles followed for the reuse of this heritage as well as the basic techniques for conservation can be included in such courses. All the above will help towards the establishment of the general principles and methodology of a holistic protection of **vernacular heritage**. In order to learn and establish a holistic knowledge of vernacular dwellings theoretical teaching as well as in-situ visits and field work in vernacular settlements is essential. The combination of theoretical and practical study is very important (this is a suggestion included by students in IO2 Questionnaires).

In the framework of such courses students can be divided into groups and each group selects a vernacular settlement that preserves its authentic character. An analysis and theoretical study of all aspects (architectural, socio-economic) of the settlement under study can be undertaken. Then a building or small complex which needs conservation can be selected for survey. At the same time a scenario can be proposed regarding the reuse of the vernacular dwelling.

Teaching in such courses is often carried out through lectures as well as through indicative projects. During the semester brief presentations of the projects can take place. Visits are also organised to vernacular settlements for the better understanding of the various themes which are being analysed during the semester.

# WHY?

## GOALS

The main teaching intentions of courses related to **vernacular heritage** is the holistic presentation of the main principles and characteristics of **vernacular heritage** and its social content. The students through such courses should develop methodological tools for the study and recognition of the physiognomy of the traditional settlements as well as for understanding the principles of overall protection of vernacular buildings and complexes. These intentions can be fulfilled through lectures, as well as through projects, field trips etc. The study of this heritage is very important as **vernacular heritage** constitutes a large part of the built environment of many countries and today many vernacular dwellings are in risk due to abandonment. Thus, there is a need for their study and their protection.

## TEACHERS' COMPETENCIES

A teacher in order to effectively transfer knowledge about **vernacular heritage** and conservation should:
- combine practical and theoretical knowledge and experience on this field
- know the use of materials and equipment in survey and conservation practice
- effectively communicate with other professionals as well as with crafts people
- be able to cooperate with traditional communities and governmental bodies
- be engaged in the study of vernacular heritage and be able to transfer her/his enthusiasm to students
- be familiar with conservation principles and the international framework for the protection of vernacular heritage

The combination of practical with theoretical knowledge in order to transfer knowledge effectively to the students was underlined in the IO2 Questionnaires.

## COURSE TYPE

- [ ] Design Studio (DS)
- [ ] Intensive Workshop (IW)
- [x] Theory Course (TC)
- [ ] Seminar (short comprehensive) (SSC)
- [ ] Laboratory work (LW)
- [ ] Research Thesis (RT)
- [x] Field work (FW)
- [ ] Internship Practical training (IPT)
- [ ] Other (O)

## SCALE

- [ ] Construction Detailing and Interior Design Scale (XS)
- [x] Architecture: Buildings Scale (S)
- [ ] Urban Design Scale (M)
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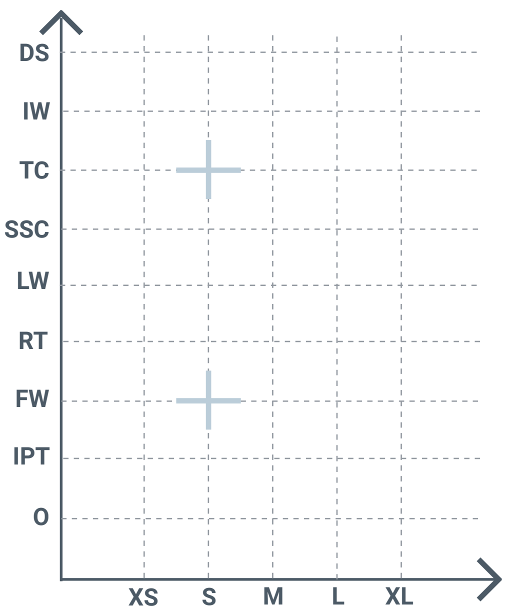
- [ ] Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [ ] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [x] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [ ] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [ ] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [x] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [ ] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- [ ] how the theories, practices and technologies of the arts influence architectural design;
- [ ] the creative application of the fine arts and their relevance and impact on architecture;
- [ ] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- [ ] theories of urban design and the planning of communities;
- [ ] the influence of the design and development of cities, past and present on the contemporary built environment;
- [ ] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

//////////////////////////////////////////

Project title and location:

- Restoration and Rehabilitation of a Vernacular dwelling in Kapedes

Authors:

- Maria Philokyprou

Year (period) of the project

- 2010-2011

Typical rural vernacular dwelling with some special characteristics (dichoro, semi-open entrance in the form of dichoro, balcony towards courtyard with a triangular shape). The house is built with traditional materials such as stone of igneous rocks for the lower part of the structure and adobe for the superstructure, and timber as roofing material. The vernacular dwelling was restored and reused with the addition of new constructions, so that it can serve contemporary needs, without compromising the character and uniqueness of the space. For the conservation of the house, traditional materials and techniques were used by traditional craftsmen. Adobes were prepared following the traditional techniques. Local materials and techniques were used during conservation (IO1_VERNACULAR DWELLING IN KAPEDES).

Figure 1. Vernacular Dwelling in Kapedes
*Credits: Maria Philokyprou*

Project title and location:

- Lefkara-Vernacular Settlement

Authors:

- RehabiMed Research Program
  Department of Antiquities: Lena Pissaridou, architect.
  Department of Town Planning and Housing: Irene Hadjisavva, architecturbanist.
  Vassilis Ierides Associates: Vassilis
  Ierides, architect and David Castrillo, architect

Year (period) of the project

- 2005-2007

Lefkara vernacular heritage on the two sides of a traditional street comprised of 27 buildings of various uses, mainly residential. The buildings, located in this area, are mainly vernacular dwellings and are mostly two-storied, with stone masonry and inclined tiled roofs. The buildings follow a continuous attached building system common in traditional settlements.

Figure 2. Facades of vernacular dwellings in Lefkara settlement
*Source: https://www.rehabimed.net/2015/11/urban-land-scaperehabilitation-in-lefkara-cyprus-the-recupera-tion-of-amodern-past/*

The dwellings usually consisted of the following main spaces: the semi-open iliakos (portico) where the entrance to the house is located, the main space of the house which is called dichoro or palati and the sospito which was the storage area of the house. Through a conservation proposal, a holistic approach was followed for the site and its various elements. The project included the conservation of 19 facades of vernacular dwellings, the infrastructure for future implementation of the underground electrical network infrastructure, the improvement of the present external electrical network, the repair and reconstruction of a small area of pavements and the placement of some urban furniture and signs (IO1_LEFKARA_VERNACULAR SETTLEMENT).

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Ana Zorić

04/14

# heritage types

statements

# PERFORMATIVE AND AFFECTIVE HERITAGE

*перформативно и афективно наслеђе • Tradizioni ed espressioni di arti performative e pratiche sociali (eventi rituali e festivi, artigianato tradizionale) • ή Βιωματική και Συναισθηματική Κληρονομιά (Ήθη και έθιμα της πολιτιστικής κληρονομιάς) • Patrimonio Performativo y Afectivo*

## GENERAL DEFINITION/ EXPLANATION

**Performative and affective heritage** is a form of heritage that is constantly being constructed and reconstructed in accordance with changes in the socio-cultural context. It refers to spaces that encourage the emotional and imaginary relationship of users, expressed through the examination and reproduction of the past, as well as the reconstruction of existing systems of meaning by developing new interactive practices. These features derive from the historical character of the heritage space, as parts of the past that remain different from the environment, often free and suitable for critical expression, action, and spontaneous appropriation. The process of performativity and affectivity itself must be collective so that different actors can incorporate their different views into debates. In this context, heritage is a polygon of free expression and experimentation through which it is constantly re-examined and changed. In this way, this type of heritage remains active and self-sustaining through current socio-cultural interactions.

## WHAT?

### CONTENT

Having in mind that this type of heritage is also manifested through intangible forms, habits, and practices, at the level of education it is important to understand intangible forms of heritage and socio-cultural changes. Therefore, important for the learning process is:
- recognizing the relations between space and society, through understanding the history of the place, through studies of culture and behaviourism
- observation of heritage not only as a material but also an intangible category, which still lives and changes

In the context of sustainability, this type of heritage promotes socio-cultural sustainability. By supporting the micro practice of **performative and affective heritage**, as mirrors of society and culture, the attitude towards heritage as a whole is constantly re-examined.

## HOW?

### METHODS

**Performative and affective heritage** is a form present at the level of urban practices, in different scales, and the goal is to learn the changes of the urban environment through the socio-cultural aspect, understand spheres of urban life, and develop a critical attitude towards practices in urban space following contemporary trends.

# WHY?

## GOALS

The main teaching intentions of courses related to vernacular heritage is the holistic presentation of the main principles and characteristics of vernacular heritage and its social content. The students through such courses should develop methodological tools for the study and recognition of the physiognomy of the traditional settlements as well as for understanding the principles of overall protection of vernacular buildings and complexes. These intentions can be fulfilled through lectures, as well as through projects, field trips etc. The study of this heritage is very important as vernacular heritage constitutes a large part of the built environment of many countries and toady many vernacular dwellings are in risk due to abandonment. Thus, there is a need for their study and their protection.

## TEACHERS' COMPETENCIES

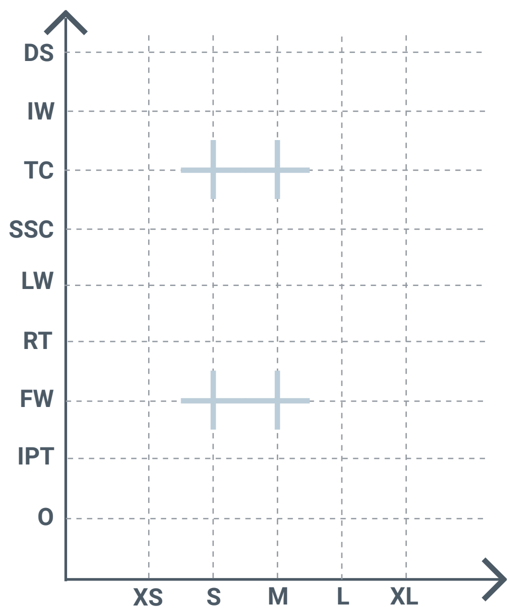
Referring to the importance of understanding social practices as an active part of a heritage, special teaching competencies include knowledge of socio-culture studies. The research approach implies both general knowledge in the field of studies of culture, history, and behaviorism, as well as knowledge of the local specifics of a particular place and current events in society. In addition to the theoretical basis, an important part of learning is the observation and study of sites. In accordance with the above, the teacher should be a knowledgeable expert, but also a social agent and a classroom actor, who encourages critical thinking.

## COURSE TYPE

- ☐ Design Studio (DS)
- ☐ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ☐ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ☐ Research Thesis (RT)
- ■ Field work (FW)
- ☐ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ☐ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ☐ Urban and Regional Planning Scale (L)
- ☐ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ☐ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ■ the creative application of the fine arts and their relevance and impact on architecture;
- ■ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ☐ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- □ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- □ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ■ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Ifö Center is a free culture house initiated by artists in an old ceramic factory in the village of Bromölla in southern Sweden. An interesting fact is that the center is located in a factory that is still active. The factory area has been totally closed to outsiders for decades, but select parts can now be visited through the center’s guided tours. The center offers an outdoor gallery for the artwork of local and international street artists, studio space, residencies and various workshops, art exhibitions, etc.

http://ifocenterenglish.weebly.com/

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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University of Cyprus

UCY

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Maria Nodaraki

05/14

**heritage types**

statements

# TANGIBLE AND INTANGIBLE HERITAGE

*материјално и нематеријално наслеђе • Patrimonio culturale tangibile ed intangibile • Υλική και Άυλη Κληρονομιά • Patrimonio Tangible e Intangible*

## GENERAL DEFINITION/ EXPLANATION

**Tangible heritage** includes buildings and historic places, monuments, artefacts, etc., which are considered worthy of preservation for the future. These include objects significant to the archaeology, architecture, science or technology of a specific culture (Hamilton, 2003)

**Intangible heritage** includes traditions or living expressions inherited from our ancestors and passed on to our descendants, such as oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts, food and medicine heritage and digital heritage (Hamilton, 2003).

In the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) what is called today tangible heritage includes monuments, sites, and groups of buildings. Intangible heritage was recognized by UNESCO through the Convention for the Safeguarding of the Intangible Cultural Heritage (2003) and as a term replaced what was referred to an UNESCO document of 1989 as traditional culture and folklore.

The Convention of 2003 recognizes the '*importance of the intangible cultural heritage as a mainspring of cultural diversity and a guarantee of sustainable development*' (Convention for the Safeguarding of the Intangible Cultural Heritage, 2003). Protecting tangible heritage and safeguarding the intangible heritage of a place, implies the adoption of a holistic approach to the cultural heritage of a place, promoting sustainability.

Education of cultural heritage should regard the intangible heritage as the larger framework within which the tangible heritage takes on shape and significance (Bouchenaki, 2003).

# WHAT?

## CONTENT

Cultural heritage of a place consists of different components, material and immaterial, which reflect the interaction between the people and their surrounding environment. Achieving the economic, social and environmental dimensions of sustainable development requires holistic approaches to policies, given positive synergies across all the different dimensions of heritage. The goals of sustainable development enable heritage conservation and help raise awareness about the importance of heritage conservation in maintaining the identity of a place. On the other hand, both **tangible and intangible cultural heritage** can be used as a catalyst for the sustainable growth and can strongly contribute to social cohesion enhancing the sense of spatial identity and stimulating local communities to engage their environment. Moreover, **cultural heritage (tangible and intangible)** can be seen as a vital resource for cultural production and competitiveness and as a promoter of environmentally friendly solutions. A course, which might combine tangible and intangible heritage with sustainability should focus on linking cultural heritage and identity through an understanding of the communities and their interrelationships with their surroundings. This would lead to a better understanding of the factors triggering change, but also fostering landscape resilience and thus promoting sustainability.

# HOW?

## METHODS

The teaching philosophy of courses related to tangible and intangible cultural heritage should be the perception of heritage as a whole, which ranges from monuments, historic sites or landscapes, to traditions and oral histories. Courses should not only introduce and define the key concepts, but also give the opportunity to students to consider heritage in its wider context. The protection of **tangible cultural heritage** consists mainly of conservation and restoration measures, which are taught through a critical and interdisciplinary perspective. **Intangible heritage**, on the other hand, consists of processes and practices and accordingly requires a different safeguarding approach and methodology. The interaction between students and the community or other social groups or organizations, which was underlined in IO2 Questionnaire, should be embedded in the learning process.

# WHY?

## GOALS

Heritage-related courses should help students develop the necessary common terminology, methodology and skills to reflect critically on the assessment and safeguarding of **tangible and intangible heritage**. Furthermore, students should be able to recognize that cultural heritage is, by nature, complex and diverse and that studying heritage beyond merely its physical aspects is of the utmost importance in facing new and increasingly complex challenges in the built and natural environment. The emphasis should be on developing design projects through the application of relevant analytical tools and assessment procedures. Therefore, achieving a sustainable and inclusive environment and overcoming social, economic, or environmental inequalities through dialogue, based on well-argued opinions, should be at the heart of heritage education.

## TEACHERS' COMPETENCIES

A teacher should possess special teaching competencies in order to effectively transfer knowledge regarding the multiple dimensions of cultural heritage (material and immaterial). More precisely, a teacher, as an expert in the field of heritage, should:

- be well aware of the critical perspective, research methodologies and practices used in the assessment and safeguarding of tangible and intangible heritage as reflected in international guidelines, charters, literature and conservation practice.
- provide students with cross-disciplinary learning tools and enrich classes with diverse types of learning activities (in-class or on-site), contributing to an integrated approach to cultural heritage.
- be open to work in partnership with external organisations (academic or otherwise) related to heritage, creating a variety of authentic and innovative learning experiences for students that foster the development of indispensable skills.

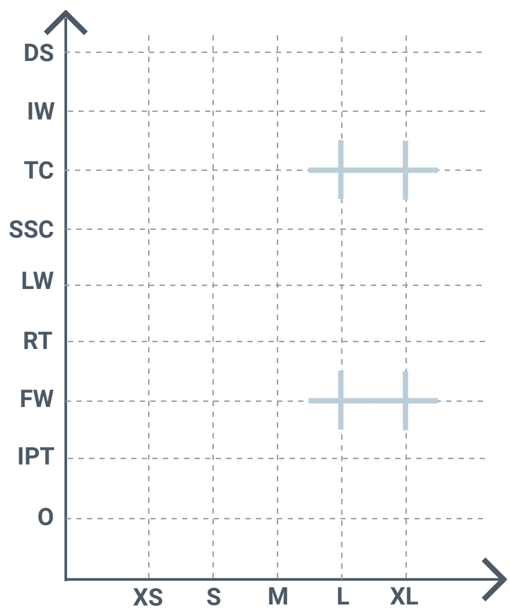
The integration of practical and theoretical knowledge, which is essential for the effective teaching of Tangible and Intangible Heritage, was noted by students in the IO2 Questionnaire.

## COURSE TYPE

- [ ] Design Studio (DS)
- [ ] Intensive Workshop (IW)
- [x] Theory Course (TC)
- [ ] Seminar (short comprehensive) (SSC)
- [ ] Laboratory work (LW)
- [ ] Research Thesis (RT)
- [x] Field work (FW)
- [ ] Internship Practical training (IPT)
- [ ] Other (O)

## SCALE

- [ ] Construction Detailing and Interior Design Scale (XS)
- [ ] Architecture: Buildings Scale (S)
- [ ] Urban Design Scale (M)
- [x] Urban and Regional Planning Scale (L)
- [x] Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [x] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [ ] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [ ] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [ ] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [x] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [ ] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- [ ] how the theories, practices and technologies of the arts influence architectural design;
- [x] the creative application of the fine arts and their relevance and impact on architecture;
- [ ] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- [ ] theories of urban design and the planning of communities;
- [x] the influence of the design and development of cities, past and present on the contemporary built environment;
- [ ] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- □ the needs and aspirations of building users;
- □ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ■ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- □ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

//////////////////////////////////////////

Project title and location:
- Urban Landscape rehabilitation in Lefkara, Cyprus

Authors:
- Lena Pissaridou, Irene Hadjisavva, Vassilis Ierides & David Castrillo

Year (period) of the project
- 2005-2007

Figure 1. Lace- making in Lefkara in the past.
*credits: https://ich.unesco.org/en/RL/lefkara-laces-or-lefkaritika-00255*

Figure 2. Lace-making in Lefkara today.
*source: Lefkara Municipality 2008, Ministry of Education and Culture.*

The scope of the project was the preservation and rehabilitation of a part of the urban landscape of the village of Lekfara in Cyprus, and its promotion as a factor of sustainable development. The project included the restoration of 19 facades of the traditional settlement, the renewal of the infrastructure networks, the repair and reconstruction of the external pavings and the urban design of the exterior spaces (placement of street furniture and interpretation signs). The preservation and rehabilitation of the tangible heritage of the settlement was strongly connected with the safeguarding of the intangible heritage of the site, which is the traditional craftsmanship of lace-making. Lace-making dates back to the 14th century. It combines art and social practice and is still the primary occupation of the local women. Lace-making of Lefkara was inscribed in 2009 on the Representative List of the Intangible Cultural Heritage of Humanity of UNESCO. The tangible and intangible heritage aspects of the site are interconnected. The former provides the physical support for the latter, while the latter contributes to the preservation and conservation of the former.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

//////////////////////////////////////////

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Ana Nikezić

06/14

**heritage types**

statements

# CULTURAL LANDSCAPE

*културни предео • Beni paesaggistici • Πολιτιστικό Τοπίο • Paisaje Cultural*

## GENERAL DEFINITION/ EXPLANATION

**Cultural landscape (CL)** generally describes a dynamic symbiosis between natural environment and human activities i.e., built interventions with an essential character of the place. Therefore, it represents an interwoven relationship between society, environment and culture. It encompasses two interrelated meanings, referring to, both, the spatial patterns that culture imprints on the land and the interpretative strategies for understanding cultural meaning embedded in the landscape. Thus, CL embraces a multi- and inter- disciplinary approach navigating between geography and cultural, urban and environment-behavior, as well and social and ecological studies.

The term was firstly coined by Friedrich Ratyel (1895) and frequently came into use in geography at the beginning of the XX century (Berkley school of geography). Later it came to be accustomed by the mid of the XX century in heritage studies (Hoskins 1955). This interest continued with the environmental movement and finds expression in landscape and historical ecology finding itself in environment-behavioral and later entering ecological studies (Tuan 1974, Appleton 1975). Finally, it became a part of the field of architecture and urbanism when in 1990s the term CL was adopted by various international bodies as a conservation category. In 1992 the UNESCO World Heritage Committee became the first international legal instrument to recognize, protect and include CL in the World Heritage List (UNESCO 2003) in accordance with World Heritage Convention of 1972 slowly changing the overall approach to cultural heritage (Rossler 2006).

Today, the notion of Cl embraces a diversity of manifestations enhancing natural and man-made values in the landscape (Larsen 2017), enhancing a new socio-ecological paradigm for identifying, understanding and treating cultural heritage in a more sustainable way.

# WHAT?

## CONTENT

The concept of CL is clarified by discussing its two components – Landscape and Culture. Therefore, the content of CL curricula should have threefold perspective: (a) understanding the phenomenon of Landscape and Culture – historical and contemporary perspective, (b) insight about components of CL that produce its character and ambiance, landscape perception by all our senses, aesthetic experience, (c) introducing techniques and tools for the critical analysis of the multidisciplinary character and diverse context in which CL is understood and developed.

**CONTEXT**

*Technological arena*: The origin of the concept and its multidisciplinary context; Advocacy of the study of high style and vernacular and the relation between them;
*Socio-political arena*: Creating the methodology for critical analysis concerning CL perception and its aesthetic experience;
*Academic arena*: critical discussion of the role of ordering systems and clarification of how cross-cultural studies should be done
*Practical arena*: Insight into the nature of design as a process.

**APPROACHES**

PROBLEM-BASED
PLACE-BASED
RESEARCH BY DESIGN

**TOOLS AND TECHNIQUES**

Spatial Analysis
Diagramming

Engaging all three thematic frameworks would provide a comprehensive understanding of the CL approach and points to entirely new meanings regarding sustainability and heritage. These meanings would be primarily decoded in relation to multidisciplinary nature, to questions of CL perception and its esthetic experience and the intention to make the most of the capacities of the inherited spatial framework, reducing the consumption of new resources for the construction or radical transformation of entire urban entities.

# HOW?

## METHODS

Through recognizing all the features of the CL approach, learning should include a combined teaching philosophy:
(1) problem-based approach represents the core of teaching and learning philosophy, with the ultimate goal to identify specific problem concerning built heritage and solve it through design;
(2) multidisciplinary-based approach crisscrossing a diverse body of norms and values relevant for the design process;
(3) designerly way of thinking as a diagramming tool to conduct critical analysis, define design inputs, and enhance research by design approach.

In order to achieve a high level of applicability of the CL approach in the design process, the necessity of case study engagement in educational process is essential - research on specific spatial configuration and diverse body of contexts in which CL plays an important part. To fully understand and be able to use components of CL in the design process, place-based approach is essential.

# WHY?

## GOALS

Through mastering the proposed threefold content future professionals could develop:
- understanding, systematizing and operationalizing diverse components of CL
- operative knowledge about the main approaches to CL and its contemporary state-of-the-art
- ability to apply gained knowledge in professional context
- ability to use different tools and techniques for the analysis of CL as cultural heritage, regarding its historical urban context, its present content and scope, as well as its contemporary multidisciplinary paradigm
- ability to apply problem-based methodology through place-based approach
- ability to create and present design solutions in line with CL values, and
- ability to justify critical point of view in discussions about CL and the overall evaluation of heritage on different scales and in different settings.

## TEACHERS' COMPETENCIES

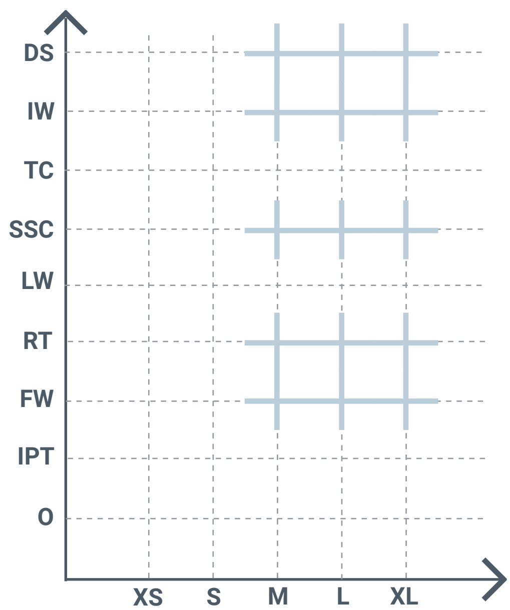
Following the multidisciplinary nature of CL, as well as the fact that CL is primarily perceived and experienced by the individual, teacher has to be able to use resources from diverse disciplines, to have a genealogical approach in teaching and to use experimental methods and tools. Therefore, specific competencies of teachers in CL education relate to (a) knowledge deliverer and knowledge designer - working within multiple disciplines and strong understanding the relationship of architecture to other disciplines in order to provide the widest possible scope for transferring of program values and (b) skills enhancer – the ability to articulate the relationship between students' analytical thinking and its representation through the intersection of visual methodologies (graphical techniques and tools).

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- □ Construction Detailing and Interior Design Scale (XS)
- □ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- □ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Pablo Millán Millán

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**heritage types**

statements

# URBAN HERITAGE

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*урбано наслеђе • Patrimonio urbano • Πολιτιστική Κληρονομιά του Αστικού Περιβάλλοντος • Patrimonio Urbano*

## GENERAL DEFINITION/ EXPLANATION

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The concept of "**urban heritage**" is a recent definition. It was first used in the mid-20th century. Its use is determined by the extent of the scope to which it refers. Thus, on the one hand, it is used to signify elements that are recognised as having heritage value within the framework of an urban area. On the other hand, this concept underlines the city as heritage because of the cultural, anthropological, and social factors it contains. The term is closely linked to historic centres, although it transcends the merely constructed. Such is the case that UNESCO underlines the various heritage dimensions that are generalised in the urban context of the city. It was first used by Gustavo Giovannoni in 1931 and was quickly adopted by different social disciplines for the study of urban phenomena. It is considered as a concept under continuous review within the field of heritage. Nowadays it is even referred to as "historic urban landscape" to broaden the scale of its application.

## WHAT?

### CONTENT

It is a term in continuous evolution and therefore, from its earliest use up to the present day, it has passed through different phases and periods. The term was originally used to refer to the preservation of cities, neighbourhoods, historic centres, etc. More recently it has been enriched by the vision of the social sciences and the different approaches contributed by academic and educational contexts. It is these changes or mutations that Rodwell or Labadi and Logan emphasise, highlighting the close relationship between sustainability and our concept. They show that talking about the conservation of the contemporary city and urban contexts intrinsically involves making heritage cities sustainable, not only materially, but also sociologically. We need to conceptualise "**urban heritage**" to develop all the relevant aspects: social, anthropological, material sustainability, etc. This involves the study of concepts such as the crystallisation of cities, their loading capacity, heritage implosion, thematisation, gentrification, etc. All these concepts must be studied peripherally, since this is how the student will come to understand the need to talk about the sustainability of heritage cities and, consequently, of **urban heritage**.

## HOW?

### METHODS

The teaching of this concept should be approached through a problem-based methodology. The analysis of protected urban contexts will highlight the different threats they face. Although beginning to study this concept requires theoretical foundations, its development is essentially practical and directly affects the intervention in the city and its design. With an exemplified proposal of heritage cities that have imploded because they exceeded their tourist or mercantile load capacity, it will highlight the new limits that society must set on **urban heritage** and thus redefine the concept of sustainability applied to this understanding of the heritage city.

The learning activities will be based on the analysis of tangible and intangible heritage in the field of study and its evolution over the recent years. From this analysis, new protection tools and what they affect will be sought. The ideal context in which to approach the development of this concept would be workshop activities, so that practical learning can be combined with theoretical development.

# WHY?
## GOALS

Addressing this concept requires knowledge of the evolution of the very concept itself, thus highlighting its close relationship with the society which recognises it. The teacher should cover areas such as the urban history of cities, sociology of the city, urban theory, theory about the evolution of the heritage concept, etc. Learning will begin

with the study of the history of the concept and how it was originally applied only to historic and heritage cities. The evolution of the concept explains the sociological evolution of the recognition of heritage values. Once the strategies for the application of the concept have been acknowledged, examples of different models of cities and thus of heritage will be given. From there, it will be possible to design strategies for the conservation and enhancement of the previously recognised values and their different approaches. It will also be very useful for learning about the structure of heritage recognition on an urban scale to analyse all the disciplines that have gradually been incorporated into the definition and application of this concept.

## TEACHERS' COMPETENCIES

The necessary competencies to be developed by the teacher in order to transfer knowledge directly and effectively are based on three levels:

- Level 1: Historical (theoretical) knowledge: the first part of the term's study is eminently theoretical, so the teacher should be familiar with the urban theories that have furthered heritage recognition on an urban scale as well as the different conceptual directions of the term "historic city", "heritage context", "historic ensemble", etc.

- Level 2: Knowledge of location (analytical): A case study will then be taken as an example of an analysis of the valorisation of an urban area. At this point, the teacher is required to help the student to investigate the physical, anthropological, historical, and social knowledge of the study area, since these will be the components that determine and design the exemplified **urban heritage**.

- Level 3: Knowledge of applied protection tools (propositional): In this final level, the teacher will help students to design tools that allow the protection of the values recognised at the previous level, as well as a propaedeutic advance of how these will affect the development of the protected area.

## COURSE TYPE

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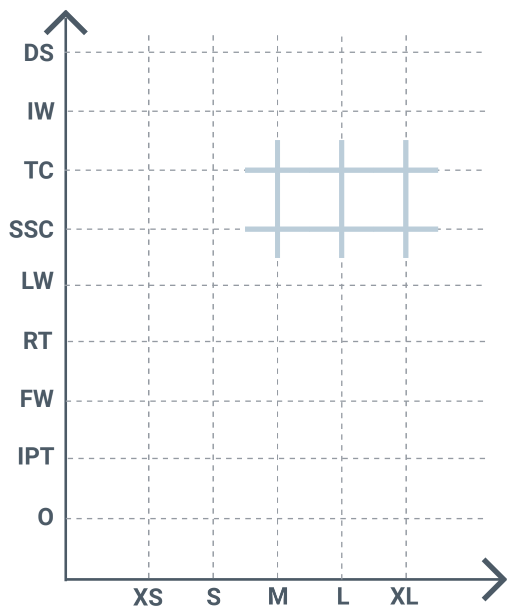


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

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- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- Venice (Italy), Cerros Alegre and Concepción. (Valparaíso, Chile), Setenil de las Bodegas (Cádiz, Spain), Favelas (Brazil)

Authors:

- N/A

Year (period) of the project

- N/A

Figure 1. Venice
*Source: www.eluniversal.com*

Figure 2. Cerro Alegre (Valparaíso)
*Source: www.rutaschile.com*

**Example 1**: Venice (Italy). Urban heritage for its architectural and constructional uniqueness. The city of Venice is the canonical example of urban heritage context and architectural exceptionality. The topographical distinctiveness of this city has resulted in the development of a long history characterised by unique layouts and architecture. This exceptional character has led it to be recognised as an example of urban heritage from the very outset of this concept.

**Example 2**: Cerros Alegre and Concepción. (Valparaíso, Chile). Urban heritage due to its architectural and sociological singularity. The complex orography of the city of Valparaíso produced unique architecture. This, together with the fact that at the end of the 19th century it became the nucleus of international trade, gave it the character of a global city, which was quickly blended into the architecture and urban spaces. The hills which are protected by UNESCO are an example of this singularity on a sociological, architectural, and therefore heritage level.

**Example 3**: Setenil de las Bodegas (Cádiz, Spain). Urban heritage due to the uniqueness of the natural context of the location. Its unique position in the mountains of Cádiz has caused this small municipality to generate a singular architecture structured with winding routes. This exceptional character has shaped a distinct worldview in its neighbours on how to occupy the territory.

**Example 4:** Favelas (Brazil). Urban heritage for its architectural uniqueness. The apparently formless urban context generated on the outskirts of many Brazilian cities has shaped a way of inhabiting the city limits that is exceptional from a constructive and social point of view. This typological adaptation to the topography is responsible for generating a specific way of understanding the place and the intra-community relations of the people who inhabit this area.

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08/14

**heritage types**
statements

# MONUMENTAL HERITAGE

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***споменичко наслеђе • Beni monumentali • Μνημειακή Κληρονομιά • Patrimonio Monumental***

## GENERAL DEFINITION/ EXPLANATION

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**Monument** word comes from the Latin *monumentum* "memory, monument" that derives from monere "remind", so it means "things reminding of something". Monuments are evidence of a particular civilization, a significant development or a historical event. From the *Venice Charter* (1964), the **monument** definition was extended to cover historic urban areas and sites, and the previous references to 'dead' and 'living' monuments (Giovannoni, 1932) were no longer relevant. In 1964 the aesthetic criteria in monuments evaluation had gained priority over historical ones.  According to the Unesco definition from the *Convention Concerning the Protection of the World Cultural and Natural Heritage* - 1972, **Monumental Heritage** collects:

*- Architectural works, monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;*

*- Groups of buildings, because of architecture, homogeneity or place in the landscape, are of outstanding universal value from the point of view of history, art or science;*

*- Sites that combined man and nature works (including archaeological sites) are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.*

## WHAT?

### CONTENT

In the past, **Monuments** were used on the didactic level for teaching history. Today they are central in the perception of the place from the communities, and monuments are part of the constitution of their **identity**.

The **Monumental Heritage** is part of the collective memory. In this perspective, the main objectives of the Academic curricula dealing with Cultural Heritage and Sustainability should be the understanding, the recognition and the care of Monuments. Academic paths on **Monuments Heritage** should give students tools to understand and critical thinking the past evidence.

The process of recognition of **Monumental Heritage** should consider the identification of its "cultural diversity factor" (such as spirituality, defence, utilisation of resources), the verification of "**authenticity**" and **"integrity"** (pertinent cultural-historical context), and the establishment of maintenance actions.

## HOW?

### METHODS

The general teaching philosophy for the **Monumental Heritage** should involve an interdisciplinary approach to the past evidence and be led by critical, theoretical, and practical components. The theoretical and interdisciplinary components consider the relationships between restoration, design, legislative framework and cultural vision.

The learning styles should include ex-cathedra lectures, practical activities and seminars with invited lecturers.

Ex-cathedra lessons focus on the theoretical aspect through the critical analysis and interpretation of international theoretical frameworks, charters, and national legislation.

Practical workshop activities and critics on specific case studies help students identify the Monumental Heritage and maintenance actions linked to the theoretical and legislative framework.

Seminars are helpful tools to present various emblematic case studies and critic them by evaluating information sources and discussions with subject matter experts.

# WHY?

## GOALS

The main objective regarding **Monumental Heritage** in Higher Education programmes will be to acquire methods and skills of analysis of the built heritage. Students should understand how to deal with Monumental Heritage identification and design proposals according to the different cultural/legislative horizons, critical evaluation of historical architecture and past stratifications.

Students should also acquire the ability to communicate using the specialized terminology and methods of discourse appropriate to the field.

## TEACHERS' COMPETENCIES

The knowledge transfer of **Monumental Heritage** protection guidelines (through cultural connections and application cases) and historical architecture understanding, evaluation, and analysis need an interdisciplinary approach.

The lessons to be effective in the transmission of cultural, theoretical, and scientific aspects should consider:

- the clear presentation of learning outcomes and outcomes verification;
- the sharing of teaching material on **Monumental Heritage** theoretical framework and case studies;
- the stimulation and motivation interest in the issues introduced.

To achieve a high level in learning outcomes and students comprehension of the topics, it can be helpful that the teacher is available for clarifications and explanations.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- ■ Research Thesis (RT)
- □ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- □ Urban and Regional Planning Scale (L)
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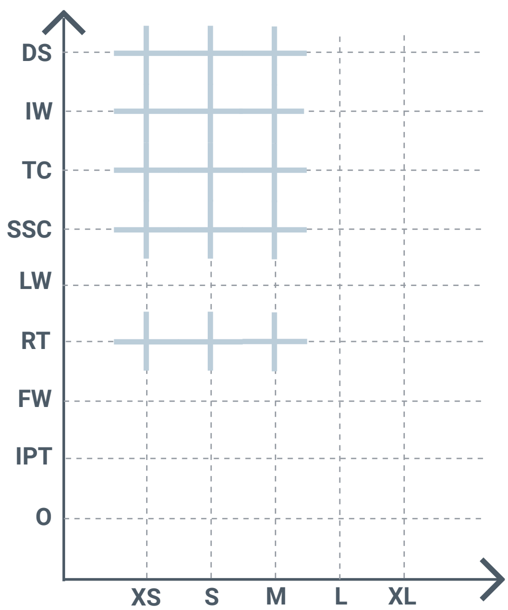


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- □ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ■ how the theories, practices and technologies of the arts influence architectural design;
- ■ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- [ ] the needs and aspirations of building users;
- [ ] the impact of buildings on the environment, and the precepts of sustainable design;
- [x] the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- [ ] the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- [x] the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- [x] the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- [ ] the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- [ ] the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- [x] the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- [ ] the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- [x] strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- [ ] the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- [x] principles associated with designing optimum visual, thermal and acoustic environments;
- [ ] systems for environmental comfort realised within relevant precepts of sustainable design;
- [ ] strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- [ ] critically examine the financial factors implied in varying building types, constructional systems, and specification
- [x] understand the cost control mechanisms which operate during the development of a project;
- [ ] prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- [ ] the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- [x] the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- [ ] the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:

- Palazzo Grimani, Virtual Visit at Tribuna

Authors:

- Museo di Palazzo Grimani, Direzione Generale Musei Veneto Venetia Heritage cured by Chiara Masiero Sgrinzatto and Luca Niccolò Vascon

Year (period) of the project

- from 11/05/2020 to 18/05/2020

Palazzo Grimani is a representative building of the history of Venice. It was the home of one of the most important families of the Venetian patriciate until the mid-nineteenth century, and starting from 2008, it opened to the public. In 1981 the palace was purchased by the Italian state. A long restoration process between 1981 and 2008 has allowed bringing the building back to its original beauty. The restoration developed different solutions to enhance the historical building and return to the citizens as evidence of a particular civilization, significant development of Venice history. The exhibition *DOMUS GRIMANI 1594 – 2019* (extended to 2022) reconstruct one of the most significant exemplars of European museology (a sequence of rooms with furnishings and artworks recreating the atmosphere of a sixteenth-century aristocratic Venetian residence). Thanks to this arrangement, Palazzo Grimani becomes a vital part of the cultural offerings of the city.

http://www.soprintendenza.venezia.beniculturali.it/it/restauri/Cantieri/palazzo-grimani-a-santa-maria-formosa

Palazzo Grimani

https://www.lucavascon.net/domusgrimani/

Palazzo Grimani

Domus Grimani 1594-2019

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Daniel Navas Carrillo

09/14

# heritage types

statements

# EMERGING HERITAGE

*наслеђе у настајању • Patrimonio culturale emergente/in via di sviluppo • Αναδυόμενη Πολιτιστική Κληρονομιά • Patrimonio Emergente*

## GENERAL DEFINITION/ EXPLANATION

The definition of **emerging heritage** is based on the conceptual evolution that the concept of heritage has undergone throughout the 20th and 21st centuries. In recent decades, heritage practice has advanced over the consideration of cultural asset. The notion of social construction of heritage has been consolidated by shifting attention from the material concreteness of objects to the subject that demands them. We are also facing a process notably influenced by the speed at which changes and social transformations are performing nowadays.

Therefore, the monumentalist approach of last century has given way to increasingly broader and more complex heritage considerations that advance through new values and meanings. In this context, assets that had not yet aroused interest and attention among heritage professionals emerge with force. It is a legacy linked, among others, to industrial history, to productive activities and technological advances, to the different manifestations of contemporary culture, to the underwater, paleontological, ethnological and environmental fields, to the new patterns of territoriality and even associated with political and/or military conflicts.

# WHAT?

## CONTENT

The course content incorporates key concepts on the assessing and preservation of **emerging heritage**. The theoretical conceptualisation of the **emerging heritage** notion and its practical development are challenging to address in a single course. In this sense, the course proposal has an introductory nature, requiring specialised development in higher courses. In general terms, the following topics are proposed to be addressed:

- Conceptual character: Introduction to the concept of heritage: from the object to the subject; The heritage process of heritagisation; Bases of heritage work; **Emerging heritage**: new values and meanings.

- Procedural character: **Emerging heritage** in the legislative framework of heritage work; Recognition of **emerging heritage**: thematic registers and inventories; New figures for the legal protection of **emerging heritage**; Protection of **emerging heritage** from urban and territorial planning.

- Attitudinal character: Critical attitude towards adequate protection of **emerging heritage** and the updating of the criteria and heritage values to be used; Awareness of the impact that current heritage work will have on future generations; Sensitivity towards the environment based on the indissoluble relationship between heritage and sustainability.

# HOW?

## METHODS

Given the experimental nature of the subject of study, a mainly procedural approach is proposed. Students approach the critical evaluation of **emerging heritage** by systematically analysing scientific texts and examples of national and international good practices. To this end, a gradual approach to the contents is made, starting with activities that generate perplexity or enigma in the students to capture their attention. A diversity of activities is used in each lesson, preserving the students' interest and facilitating adaptation to the contents and objectives.

Consequently, as opposed to the traditional methodology of knowledge transmission, the course advocates for natural critical thinking, in which students can develop their capacity for autonomous reasoning employing problem-based learning, promoting thus active learning. In this sense, the activities shift focus from the teacher, who will assume the role of scriptwriter of the contents and director of the sequence of teaching activities. On the contrary, it seeks student-centred learning by working collectively on the construction of content through processes of enquiry and shared reasoning typical of the field of research.

# WHY?

## GOALS

The teaching approach aims to transform the final product of the traditional theoretical-master class model into a process that leads from individual research and collaborative work to knowledge. This methodology seeks to encourage students to:
- investigate and analyse new situations (work on the recognition of **emerging heritage**)
- be creative, developing new answers and using different perspectives to solve the problem (consider different criteria for heritage assessing)
- develop critical thinking, not accepting a single truth, evaluating different arguments before deciding (working on different hypotheses and heritage discourses);
- be actively involved and committed to solving class activities, trusting in their abilities;
- work in teams, solving problems cooperatively, negotiating and reaching a consensus on the answers.
- Another of the teaching objectives is to train students in professional competencies as potential heritage managers. In-depth study of an incipient aspect in the heritage field, whose development has yet to be consolidated in professional practice, is also seen as an opportunity to increase the potential employability of future graduates.

## TEACHERS' COMPETENCIES

Competences required by teaching staff in the general framework of heritage studies:
- Ability to gather and interpret relevant data in the field of heritage, to make judgements that include reflection on relevant topics, the ability to analyse and synthesise, to manage information and bibliographic resources, critical reasoning, creativity, and recognition of diversity and multiculturalism.
- Ability to catalogue built and urban heritage, plan its protection, and conduct preliminary studies to intervene in it.
- Ability to intervene, conserve, restore and rehabilitate heritage.
- Adequate knowledge of the general history of architecture, general theories of form, composition and architectural types, and vernacular architecture bases.
- Adequate knowledge of the architectural, town planning and landscape traditions of Western culture, as well as their technical, climatic, economic, social and ideological foundations
- Adequate knowledge of the relationship between cultural patterns and the social responsibilities of the architect.
- Adequate knowledge of urban sociology, theory, economics and history, as well as the methodological foundations and drafting and management mechanisms of urban planning and land-use planning.
- Ability to apply urban planning regulations and ordinances (with heritage content).
- Ability to apply graphic procedures to the representation of spaces and objects.
- Ability to develop intervention proposals for the transformation of the environment, architecture and urban planning.

## COURSE TYPE

- [ ] Design Studio (DS)
- [x] Intensive Workshop (IW)
- [ ] Theory Course (TC)
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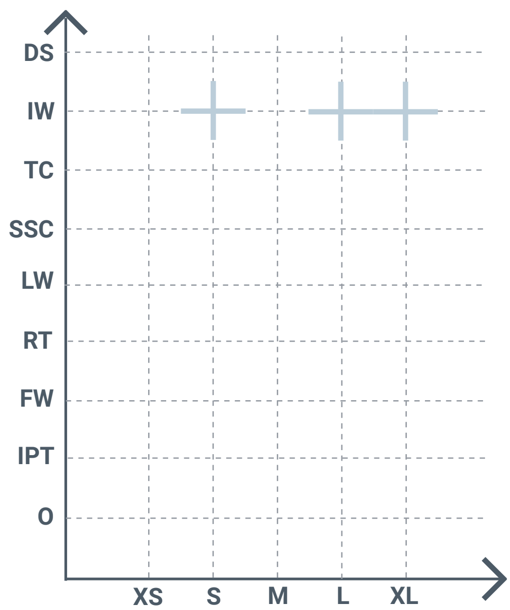


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□ the impact of buildings on the environment, and the precepts of sustainable design;

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□ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;

□ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:

- Enhancement report of the Altadis Tobacco Factory in Seville

Authors:

- Andalusian Historical Heritage Institute (IAPH)

Year (period) of the project

- 2018

"Enhancement report of the Altadis Tobacco Factory in Seville" written by the Andalusian Historical Heritage Institute (Instituto Andaluz de Patrimonio Histórico, IAPH). It is a complex made up of buildings of different types built between 1954 and 1964. It has dual status as an emerging heritage site since it belongs to the city's industrial legacy and is a reference for modern architectural production. The heritage assessment identifies, among others, urban, landscape, architectural, anthropological, historical or environmental values, based on a historical, architectural, functional, social and symbolic analysis of the complex and the study of the relationships it establishes with the urban context.

Figure 1. Identification of the factory buildings of greatest industrial heritage value (yellow)
*Source: Value assessment report of the Altadis Tobacco Factory. the Andalusian Historical Heritage Institute (IAPH).*

Figure 2. Aerial view of some of the Altadis factory buildings
*Source: Goolzoom*

Figure 3. View of the Altadis Tobacco Factory from the right bank of the River Guadalquivir
*Source: Authors*

# RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Víctor Fernández Salinas

10/14

**heritage types**

statements

# DOCUMENTARY HERITAGE

*документарно наслеђе • Beni documentari e archivistici • Αρχειακή Κληρονομία • Patrimonio Documental*

## GENERAL DEFINITION/ EXPLANATION

**Documentary heritage** consists of those testimonies (documents), tangible and intangible, with which each community, culture, country or the whole of humanity perpetuate their memory and knowledge from generation to generation. This kind of heritage has been traditionally linked to archives, museums and libraries, and, consequently, it is still associated with, for example, dockets or old books; but new information and communication technologies (ICT) have revolutionized its identification, protection, transmission and reproduction to include digital archives (although programs like UNESCO Memory of the World Register prioritise tangible documents). Its keywords are: document, meaning and open ac-cess.
This heritage has come to encompass the concept of historical memory. This confluence, however, also carries significant disagreements, since cultures forge their memories in the mirrors of their own historical perception (from local to global; consider, for example, the way **documentary heritage** in Jerusalem can be valued in multiple ways). Hence another weakness of this heritage, not only subjected to the loss of its supporting matter, but also to the appropriation and manipulation of its meaning. This can happen with any heritage asset, but it is more common and sectarian within **documentary heritage**.

# WHAT?

## CONTENT

**Documentary heritage** is essentially heterogeneous; it requires organization and structure from, mainly, two approaches: materiality and scale. It is a scholar resource that condenses the importance and sense of heritage as a whole, because it forces to identify and analyse the materiality, or lack of it, of each type of asset; keep in mind that every heritage asset is, in itself, a document. Consequently, documentary her-itage has to be understood as a cross resource of heritage, as well as a specific field that can be studied as a type of individualized heritage (such as monuments, historical centers, cultural paths or heritage landscapes). It is thereby recommended that the study of each heritage typology includes preceding content that summarizes the main heritage documents that help identifying, understanding and protect-ing it and, at the same time, note to what extent each heritage asset is a document itself. Also, an open debate about what authenticity of heritage documentary means is advisable (for that purpose, the Nara Document of Authenticity and all related literature, can be illustrative), as well as about the conditions that limit or not their free access.

# HOW?

## METHODS

Knowledge about this kind of heritage has to be stablished through student challenges. They must develop critical thinking from different perceptions and meanings of **documentary heritage**. Two types of documents can be used: a) those that can be called ancient, alluding to civilizations already disappeared (for example, the cave prehistoric painting of Altamira or Lascaux) and b) those that we will call current, as they keep a living meaning in contemporary society (like the vestiges of II World War in many cities of the planet that keep warning us of the threat and danger that war implies). The ancient documents shouldn't be confused with fossilized documents, since their perception and meaning can keep changing and evolving: even those testimonies seemingly detached from contemporary society can be rescued by social, political or cultural movements and gain new meanings.

Students can be provided with a general template containing the previously mentioned parameters (importance of materiality and scalar reference) and a list of different heritage documents to be defined and classified, and to reflect on their conditions of public access, the advantages of such access and, if not enough, point out how to improve it.

# WHY?

## GOALS

Among the benefits of understanding and reasoning about **documentary heritage**, we can highlight:
a) Students get used to find meta-meanings of heritage, what makes it a testimony and sign of identity of the community that creates it. In other words, it requires not only classifying and understanding it within the classical organization structures (intangible heritage, industrial heritage, historic centers, etc.), but forces to reflect about social, temporary and local meanings in which that heritage has been created and to which it gives values.
b) Complexity of analysis that infers from the previous point, will also provide the students with different perspectives and, at the same time, different interests of communities about their heritage. Assuming this complexity forces to abandon unidirectional perspectives of analysis and assessment, and will help to comprehend heritage values as non-static social resources, but in constant change with the values of the whole of society.
c) Search for documents is always synonymous with search of sources and that inspires research spirit and, consequently, the need to select those sources that are more reliable or appropriate to what we are searching and, especially, to the people that inform in that task.

## TEACHERS' COMPETENCIES

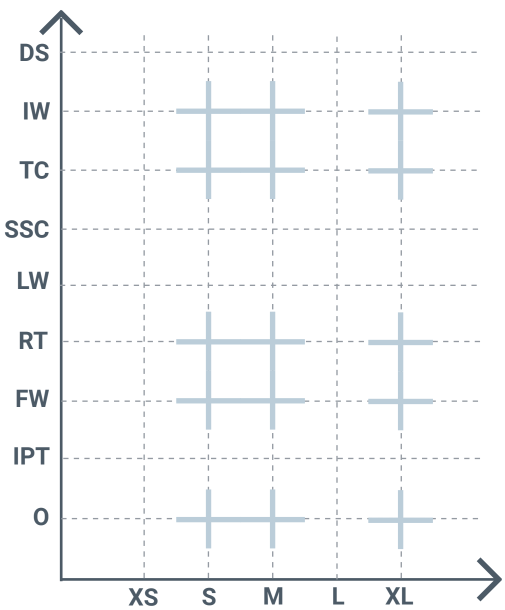
Regarding **documentary heritage**, professors must be extremely versatile and acquire cross knowledge from the various disciplines that work with heritage. Archivical, library science and documentation knowledge is important, but other perspectives that include from anthropology to architecture, from ge-ography to paleonthology, will be very valuable. Not every professor needs to be an expert in all areas, but they need to be able to work in a flexible way with many different fields. If heritage language is mul-tiple and heterogeneous, that of **documentary heritage** will necessarily be like that.
Summarizing, professors' skills are:
- Scientific knowledge on the matter (specially regarding concepts and methods).
- Attention to the heterogeneity of heritage and its spacial projection.
- Organizing contents and teaching strategies.
- Student-professor relationship skills, as well as teamwork management.
- Bring innovation and different perspectives together, specially those that diverge.
Digital skills adapted to new formats of documentary heritage.

## COURSE TYPE

- ☐ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ☐ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- ☐ Internship Practical training (IPT)
- ■ Other (O)

## SCALE

- ☐ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ☐ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ☐ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ☐ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ☐ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ☐ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ☐ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ☐ theories of urban design and the planning of communities;
- ☐ the influence of the design and development of cities, past and present on the contemporary built environment;
- ☐ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ☐ the impact of buildings on the environment, and the precepts of sustainable design;
- ☐ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

[1] Booms, H., Joldersma, H., & Klumpenhouwer, R. (1987). Society and the formation of a documentary heritage: issues in the appraisal of archival sources. *Archivaria*, 24, 69-107. Re-trieved from https://archivaria.ca/index.php/archivaria/article/view/11415.

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[6] Peña, P., & Miguel, J. (2013). El patrimonio cultural, bibliográfico y documental de la huma-nidad: Revisiones conceptuales, legislativas e informativas para una educación sobre patri-monio. *Cuicuilco*, 20(58), 31-57. Retrieved from http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0185-16592013000300003

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[8] Westeel, I. (2009). Le patrimoine passe au numérique. *Bulletin des bibliothèques de France*, 1, 28-35. https://core.ac.uk/download/pdf/12446716.pdf

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Maddalena Bassani

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# heritage types
statements

# ARCHAEOLOGICAL HERITAGE

***археолошко наслеђе • Beni archeologici • Αρχαία Μνημεία • Patrimonio Arqueológico***

## GENERAL DEFINITION/ EXPLANATION

The *Charter For The Protection And Management Of The Archaeological Heritage* (1990) declares that "**Archaeological Heritage** constitutes the basic record of past human activities [...] Some elements of the **Archaeological Heritage** are components of architectural structures". Archaeological Heritage also includes mobile objects (*e.g.* potteries, daily-life artefacts, iconographic elements, jewellery) and ancient infrastructures (*e.g.* roads, aqueducts, wells, harbours, etc. ).
The **Archaeological Heritage** combines the testimonies of ancient civilizations and covers a large historical range (starting from Pre/Proto-history up to the Middle Ages). The disciplines and tools for archaeological investigation are numerous and specific to the different research fields such as Archaeology of the Ancient near East, Classical Archeology, Medieval Archeology, Landscape Archeology *etc*.

## WHAT?

### CONTENT

**Archaeological Heritage** investigations count three different phases: analysis of the environment and the ancient written sources when attested, dig activities and the data interpretation.
In Architectural and Urban Design Higher Education, **Archaeological Heritage** has a relevant role in helping students acquire a method of analysis of the traces from the past and critically interpret them according to cultural and historical sources.
In International documents and Italian Law, the enhancement and the presentation to the general public of **Archaeological Heritage** have a central role in transmitting cultural values of Archaeological Traces. Education programmes should consider transferring students the tools to operate with the **Archaeological Heritage** in a narrative approach scientific-based and to manage the different re-construction approaches (physical and digital reconstruction).

## HOW?

### METHODS

The general teaching philosophy for **Archaeological Heritage** should involve an interdisciplinary approach to the past evidence and be led by critical, theoretical, and practical components. The theoretical and interdisciplinary tools help students consider archaeology's history from the last three centuries and to understand contemporary archaeology methods, legislative framework, and cultural vision. The learning styles should include ex-cathedra lectures, practical activities and workshops on-field.

The ex-cathedra teaching activities identify methods and tools that promote the analysis of the written sources and link them to the tangible evidence (when it is possible); comparative analysis methods of the artefacts with other similar examples from other contexts; evaluation of the artefacts in the specific landscape and stratigraphic context. An important tool but not exclusive is the archaeological analysis and comparative methods using iconographic investigations.

The practical activities and workshops on-field help students direct experience of **Archaeological Heritage** dig, measurement, drawn, and scientific analysis (such as marble or glass petrographic analysis, as well as geomorphological, botanical, osteological analysis *etc.*).

# WHY?

## GOALS

The main teaching objectives regarding **Archaeological Heritage** in Higher Education programs will be to acquire methods and skills of analysis of tangible traces of the past. Students that work in Built Environments should:
- be aware of the history of the site of interventions and consider the subsoil as the keeper of historical values and chance of architectural history;
- be aware of the legislative tools and of the institutions in charge of safeguarding and protecting the **Archaeological Heritage**;
- consider the past as an opportunity for the contemporary project - management of historical knowledge;
- have a clear idea of the different professional roles and the interdisciplinary cooperation between architects/ archaeologists in archaeological sites and in the identification of design choices
- be aware of the relationship with the local population and culture.

## TEACHERS' COMPETENCIES

The knowledge transfer of *Archeological Heritage* theoretical frame, protection guidelines (through cultural connections and application cases), historical understanding of archaeology cultural development, and traces interpretation need an interdisciplinary approach.

The lessons to be effective in the transmission of cultural, theoretical, and scientific aspects should consider:
- the clear presentation of learning outcomes and outcomes verification;
- the sharing of teaching material on the theoretical framework and case studies;
- to illustrate case studies analysis to link historical sources and monuments application;
- the stimulation and motivation interest in the issues introduced.

To achieve a high level in learning outcomes and students comprehension of the topics, it can be helpful that the teacher is available for clarifications and explanations.

## COURSE TYPE

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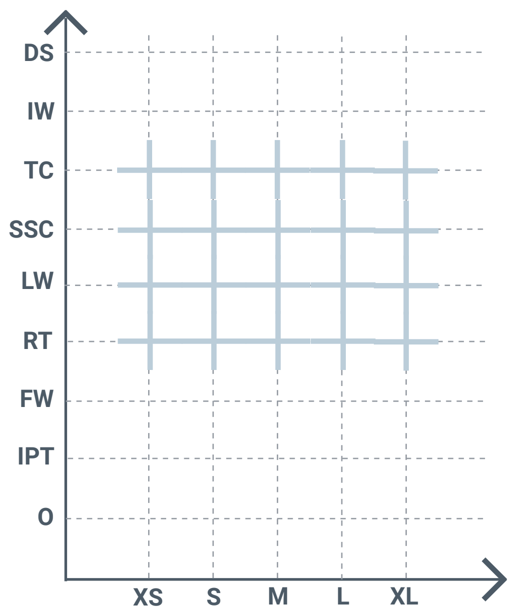


## LEARNING OUTCOMES

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- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:
- Crypta Balbi - The History of the National Roman Museum

Authors:
- N/A

Year (period) of the project
- 2016

The Crypta Balbi conservation and enhancement project were dated in 2016. Archaeological investigations in Crypta Balbi begun in 1978 and last for almost 30 years.

“The Museum preserves and displays the traces of the structures, buildings and monuments that have existed in sequence in this area over the course of two thousand years.”

The Crypta Balbi investigation is an example of *Archaeological Heritage* analysis and interpretation that planned research activity involving all fields of knowledge. The exhibition route display “the transformations affecting the urban landscape through the centuries” and help to understand it by comparing the tangible traces with the historical sources and archive documentations.

Figures: https://museonazionaleromano.beniculturali.it/en/crypta-balbi/the-archaeological-structures/

01 | Crypta Balbi - Porticus Minucia
Museo Nazionale Romano

Figure 1. Crypta Balbi – Porticus Minucia
https://museonazionaleromano.beniculturali.it/sito/wp-content/uploads/2020/08/Ambiente-sotterraneo-con-strutture-della-Porticus-Minucia-Frumentaria2-1618x1080.jpg

02 | Crypta Balbi - Reconstruction of the pillar in the northern portico
Museo Nazionale Romano

Figure 2. Reconstruction of the pillar in the northern portico
https://museonazionaleromano.beniculturali.it/sito/wp-content/uploads/2020/08/Piano-terra-1.jpg

03 | Crypta Balbi - The Baths
Museo Nazionale Romano

Figure 3. The Baths
https://museonazionaleromano.beniculturali.it/sito/wp-content/uploads/2020/07/19.jpg

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Charter examples:

[1] 1990. *Charter for the Protection and Management of the Archaeological Heritage*. Lausanne: ICOMOS - International Council on Monuments and sites. Available at: https://www.icomos.org/charters/arch_e.pdf [Accessed 29 July 2021].

[2] 1964. *INTERNATIONAL CHARTER FOR THE CONSERVATION AND RESTORATION OF MONUMENTS AND SITES (THE VENICE CHARTER 1964)*. Venice: ICOMOS - International Council on Monuments and sites. Available at: https://www.icomos.org/charters/venice_e.pdf [Accessed 29 July 2021].

[3] Francovich, R. , & Manacorda, D. (2017). *Dizionario di archeologia: temi, concetti e metodi*. Bari GLF Editori Laterza.

[4] Timothy Darvill, *The Concise Oxford Dictionary of Archaeology*, Oxford University Press 2008.

A case study of archaeology over the centuries is:

[5] Manacorda, D. (1982). *Archeologia urbana a Roma: il progetto della Crypta Balbi*. Firenze Edizioni all'Insegna del Giglio.

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**heritage types**
statements

# HERITAGE SITES

*места од културно-историјског значаја • Siti Culturali • Ιστορικά σύνολα και τόποι • Lugar Patrimonial*

## GENERAL DEFINITION/ EXPLANATION

After the 2nd World War the massive destruction of historic cities, rural and natural landscapes created the context for major doctrinal advances in the theory of conservation elaborating definitions, actions and strategies relevant to **heritage sites** in addition to isolated monuments. The "International Charter for the Conservation and Restoration of Monuments and Sites," ("The Venice Charter"), issued in 1964, states, in Article 1, that "the concept of a historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilization, a significant development or a historic event.". According to UNESCO World Heritage Convention, Art.1, as **Heritage Sites** can be considered "works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding (universal) value from the historical, aesthetic, ethnological or anthropological point of view". The study, conservation and management of **heritage sites** require an inter-disciplinary approach as standard practice. Relevant cultural heritage fields include architecture, urban and regional planning, landscape planning, engineering, anthropology, history, archaeology, ethnology, curation and archives. Protection and conservation of **heritage sites** can contribute to the achievement of SDG put forward in the 2030 UN Agenda, through the promotion of peoples wellbeing, the culture-nature approach and landscaped-based solutions of preindustrial heritage, the prosperity provided to communities through the shared resources embodied in their heritage, the promotion of social cohesion through the connecting power of heritage.

# WHAT?

## CONTENT

The concept of **Heritage Sites** has been evolutionally defined and enlarged through many conservation official documents in post war times covering a wide range in character and scale of natural and / or manmade sites. **Heritage Sites** may include: urban areas (sectors of or entire historic urban centres/urban landscapes, streetscapes, vernacular settlements, building complexes of different historic periods including modern heritage), archaeological sites, rural landscapes and structures, sites of historical events, historic gardens and natural formations of ecological and aesthetic value. The cohesion and value of **Heritage Sites** are recognized and evaluated through an archaeological, architectural, prehistoric, historic, scientific, aesthetic, socio-cultural or ecological point of view. Addressing the survey, management and conservation of **Heritage Sites** necessitates a complex interdisciplinary approach whatever the type and scale of the site. Accordingly this heritage type could be introduced to students in a series of specialized courses of studio work and/or theory (i.e. urban design, urban planning, landscape design, architectural design of infill projects, survey projects etc). For the study, planning and use of **heritage sites** sustainable and environmental parameters should be taken into consideration along with societal issues, available economic resources, maintenance and future management.

# HOW?

## METHODS

Within specialized studies linking heritage conservation and sustainability, addressing **heritage sites** may concern survey studies, conservation and planning projects, or design of infill projects of archi-tectural and/ or urban design scale. Data concerning the built and natural resources of the site, such as physical, functional, visual, material and constructional elements, historic typologies and mor-phologies, its historical evolution, environmental and topographic conditions, demographic and economic data, sociocultural values pertaining to local societies should be addressed.

- General teaching philosophy: Problem-based, Information-driven, Design-oriented, Inte-grated/inter-professional, Community-based, Systematic, Symbiotic.

- Leading methods and tools which should be engaged within the learning process: criti-cal thinking, critical evaluation of cultural heritage qualities in buildings, urban areas, settlements, landscapes, sustainability analysis from an interdisciplinary perspective, case study projects, analytic assessment, strategic planning

- Learning styles and activities: group work, interdisciplinary cooperations, site visits, data processing, mapping

- Possible/appropriate learning environment: student-centred; knowledge-centred; de-sign-centred.

# WHY?

## GOALS

The relevant courses should address the basic definitions and conservation principles concern-ing every type of **Heritage Sites**. They will also acquaint students with skills, tools and method-ologies for analysing, surveying, working out strategies, planning and designing in the context of **Heritage Sites**. Theory should include, historic analysis, environmental parameters of historic structures and natural setting, design approaches for infill projects in various scales, develop-ment perspectives, social considerations for eventual new functions and legislative issues con-cerning conservation and protection of **Heritage Sites**. More specifically:

- Key concepts related to **Heritage Sites** through the study of international conventions and recommendations relevant to the management and conservation of **Heritage Sites**.
- International and national legislation, policies and strategies for managing and protect-ing Heritage Sites
- Lectures and presentations by experts from different backgrounds addressing the key is-sues related to the proposed Heritage Site
- Presentation of best practices and case studies from international or national context.

## TEACHERS' COMPETENCIES

Introducing students to conservation and sustainability issues related to Heritage Sites, -whether through theory or design studio courses-, tutors should be able to address an interdisciplinary ap-proach either as experts or as moderators for organizing the contribution of selected experts, from academic or non academic institutions. Critical presentation of relevant case studies, collaboration with public services involved in conservation, local government and stakeholders should help ad-dressing and evaluating the wide range of parameters involved in Heritage Sites protection and management.

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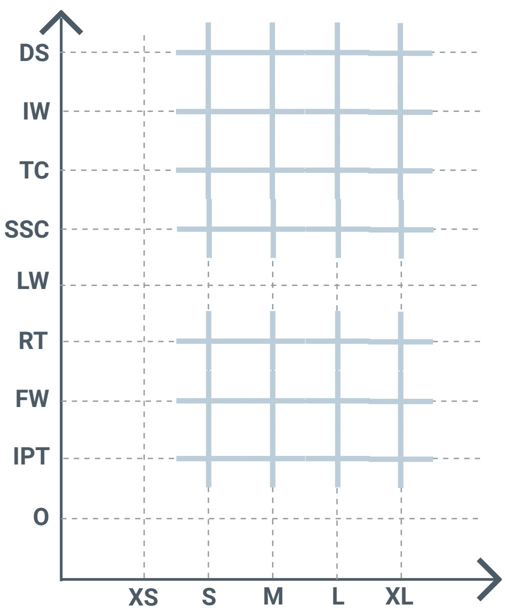


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- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ■ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- Restoration and creative reuse of a building block, Athnes, Greece

Authors:

- BETAPLAN / Ventourakis-Tavaniotis Associates/ Gr

Year (period) of the project

- 2007-2013 (I phase), 2014-2020 (II phase)

Restoration and creative reuse of a mixed use building block consisting of 13+ historic structures dating from the roman period to the present day (of residential, religious and commercial functions), in Plaka, Athens, in order to house the State Museum of Modern Greek Culture. The main concept for this restoration project was Modern Greek Culture to be promoted comprehensively in context.

All buildings were conserved and reused according to a study based on their particular structural, morphological and historical elements. The layout of the building block was totally conserved and open spaces were made accessible at all levels. All new additions -mainly for facilitating the accessibility of the new museum- reflect a contemporary architecture design approach, with a critical stance regarding the historic structures.

Figure 1. Survey Drawings (Original layout of the building before conservation)
*Credits: BETAPLAN / MNEP*

Figure 2. Photographs of the current condition of the building / site
*Credits: All photographs copyright: MNEP + Nikos Daniilidis*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Università Iuav di Venezia

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Viviana Ferrario

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# heritage types

statements

# NATURAL HERITAGE

***природно наслеђе • Beni naturali • Φυσική Κληρονομιά (Ιστορικά Τοπία) • Patrimonio Natural***

## GENERAL DEFINITION/ EXPLANATION

According to the UNESCO 1972 *Convention concerning the Protection of the World Cultural and Natural Heritage*
**Natural Heritage** consists in:
- natural features consisting of physical and biological formations or groups of such *formations, which are of outstanding universal value from the aesthetic or scientific point of view;*
- *geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;*
- *natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.*

*UNESCO criteria for selection of World Heritage Sites* (WHS) of outstanding universal value from VII to X relate to Natural Heritage.
The concept of **Natural Heritage** has a strong cultural connotation, being linked to social, anthropological and ethical arguments. This implies a dichotomy between man and nature as separate domains that leads to uncritically consider the human presence itself as a threat for nature. This aspect has been emphasized in the recent debate on Environmental Aesthetics, investigating the role of aesthetic judgment - typically of cultural derivation - in the formulation of nature conservation policies.

# WHAT?
## CONTENT

**Natural Heritage** relates to Landscape, defined by the *European Landscape Convention* (ELC) as resulting from the interaction of natural and/or human factors. For the ELC, "*landscape contributes to the formation of local cultures and that it is a basic component of the European natural and cultural heritage*" (Preamble).

ELC recommends (Art. 6) that schools and universities should address courses to "*the values attaching to landscapes and the issues raised by their protection, management and planning*", and *train specialists in landscape appraisal and operations*. **Natural Heritage** educational programmes should involve *multidisciplinary courses in nature conservation policies, landscape policy, protection, management and planning*.

The transmission of knowledge on **Natural Heritage** in Architectural and Urban Design Higher Education implies the use of a multidisciplinary approach aimed at the knowledge and interpretation of issues addressed in other fields of knowledge, such as natural sciences, geography, anthropology, history.

# HOW?
## METHODS

The general teaching for **Natural Heritage** should involve an interdisciplinary approach led by critical, theoretical, and practical components. The theoretical and interdisciplinary tools help students consider Natural Heritage's history from the 18th Century to contemporary legislative framework and cultural vision. The learning styles should include ex-cathedra lectures, practical activities and workshops on-field. The ex-cathedra teaching activities identify methods and tools that support the analysis and interpretation of the contemporary landscapes and the evaluation of the specific landscape cases study.

# WHY?

## GOALS

Higher Education teaching in relation to **Natural Heritage** has, as the main objective, the transmission of the theoretical frame and the operative tools of safeguarding unique and irreplaceable heritage.
The achievement of these abilities is intended to prepare future experts capable of identifying, protecting, conserving, presenting and transmitting to future generations of the cultural and natural heritage.

## TEACHERS' COMPETENCIES

The knowledge transfer of the **Natural Heritage** notions needs a specific and, at the same time, interdisciplinary learning approach. The lessons to be effective in the transmission of theoretical, cultural and social aspects should consider:

- the clear presentation of learning outcomes and outcomes verification;
- the sharing of teaching material on the theoretical framework and the specific case study presented during the course.

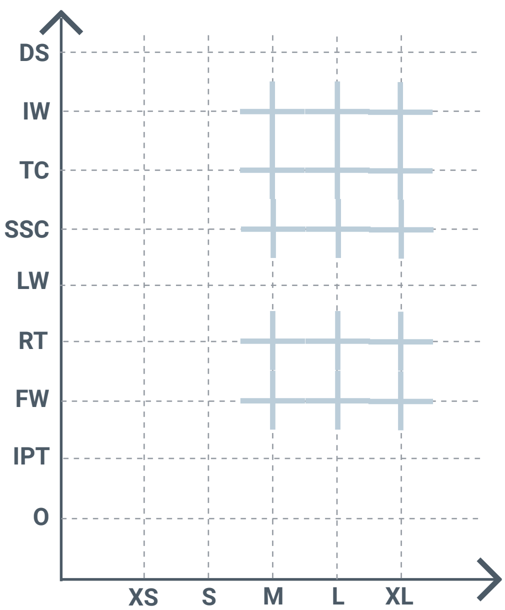
To achieve a high level in learning outcomes and students comprehension of the topics, it can be helpful that the teacher is available for clarifications and explanations

## COURSE TYPE

- □ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- □ Construction Detailing and Interior Design Scale (XS)
- □ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ■ how the theories, practices and technologies of the arts influence architectural design;
- ■ the creative application of the fine arts and their relevance and impact on architecture;
- ■ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- [ ] the needs and aspirations of building users;
- [x] the impact of buildings on the environment, and the precepts of sustainable design;
- [x] the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- [ ] the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- [ ] the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- [x] the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- [x] the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- [ ] the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- [ ] the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- [ ] the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- [ ] strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- [ ] the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- [ ] principles associated with designing optimum visual, thermal and acoustic environments;
- [ ] systems for environmental comfort realised within relevant precepts of sustainable design;
- [ ] strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- [ ] critically examine the financial factors implied in varying building types, constructional systems, and specification
- [ ] understand the cost control mechanisms which operate during the development of a project;
- [ ] prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- [x] the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- [x] the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- [x] the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- Dolomites mountains

Authors:

- Dolomites Foundation

Year (period) of the project

- Since 2009

Since 2009 the Dolomites mountains (Italian Eastern Alps) have been included in the *UNESCO World Heritage List* (WHL) as a natural site, according to criteria VIII, relating to geological processes and the consequent physical forms significant for the history of the Earth, and VII relating to natural beauties. Several projects, both material and immaterial, have been put in place by the Dolomites Foundation to manage the WHS Dolomites and to valorize Natural Heritage (https://www.dolomitiunesco.info).

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Daniel Pinzón-Ayala

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**heritage types**

statements

# MILITARY HERITAGE

*војно наслеђе • Beni culturali rilevanti per la storia militare • Ιστορικές Στρατιωτικές Εγκαταστάσεις (Στρατιωτική κληρονομιά) • Patrimonio Militar*

## GENERAL DEFINITION/ EXPLANATION

**Military heritage** comprise of any structure built with either natural (i.e., botanical, or geological) or syn-thetic materials, by a community to protect themselves from assailants or, in some countries today, for the maintenance of public safety, Such structures include, works of military engineering, fortifications, arsenals, harbors and naval Shipyards barracks, military bases, barracks with military houses, bunkers, testing fields, and other enclaves and constructions built or used for military, offensive and defensive purposes. Military cultural landscapes include but are not limited to territorial or coastal defense installa-tions and earth Works, which have made it possible to conserve natural spaces that, in several cases, have been transformed into natural parks and protected areas. Their presence in historically warlike terri-tories such as the Mediterranean has given them a series of values similar to those of other buildings and heritage sites, but they also possess specific values that must be carefully studied, analysed and conserved, as they form part of our past and recent history and have conditioned the evolution of our cities and territories.

# WHAT?

## CONTENT

**Military heritage** is of great importance for understanding the past and present of a large part of our cit-ies, as well as the landscape and peripheral spaces (such as coasts or borders). In many cases they rep-resent elements of great magnitude with a relevant architectural and urban presence, which largely condi-tions the interventions that can be carried out, due to their historical, social and economic character. On its own, **military heritage** has the capacity to form a monographic study programme, as it allows histori-cal studies, fieldwork and projects to be carried out, but also to form part of other programmes due to its transversal nature: historical, architectural, urban, landscape.... For this, it is essential to know different research and intervention techniques linked to heritage, sustainability, history, urban planning and knowledge of materials, as well as acquiring group work and interdisciplinary skills, which are compulso-ry for studying, analysing and working on this type of heritage. The student finally obtains the ability to develop an integral process, in which construction and economics are also present, both conceptually and instrumentally.

# HOW?

## METHODS

The appropriate teaching strategy is one in which the student is the main character of the learning process, where in addition to acquiring responsibilities and critically approaching the contents provided in the subject, he/she exchanges points of view and experiences with his/her classmates.
The study of **military heritage** allows the promotion of different methods that combine: Problem-Based Learning (PBL), Service Learning (SL), Cooperative Learning (CL), lectures / expository method and case studies. This is the framework within which the learning of this programme is proposed, which is the result of combining different methodological strategies, each one is chosen according to the contents, teaching objectives and competencies to be developed. They are given various training activities, combining individual work with group work, using international examples but also local examples close to their real context.
As with any type of heritage, the phases of the heritage methodology can be summarised as follows: a collection of materials / representation or heritage identification / identification of the heritage problem or diagnosis / values / intervention strategy / lines of action / knowledge transfer. The same applies to the tools, with which should be engaged within the learning process: documentary management, interpretation, graphic sources (photos, maps, films, among others).

# WHY?

## GOALS

Through the study of this type of heritage, students learn the historical and cultural knowledge necessary to carry out diagnoses and heritage assessments of architecture, the city and those territorial elements that form part of the landscape. Likewise, due to the characteristics of **military heritage**, students will be able to structure and apply the theoretical, critical and instrumental elements of the preliminary studies necessary for architectural interventions for the rehabilitation of built heritage. In addition, students will become aware that heritage and culture are current resources that contribute to local development and the local economy, and are therefore considered key elements of urban, economic and social sustainability.
**Military heritage** is perfectly associated with some key concepts in the learning/teaching process: cultural complexity and interdisciplinarity, the multi-scale condition of the city, sustainable urban development; heritage as an element for urban regeneration, heritage and new technologies or the binomial creativity and scientific methods.

## TEACHERS' COMPETENCIES

The unique characteristics of **military heritage** (historical background, interdisciplinary nature, architectural and urban presence, complexity of adaptation to the needs of the 21st century...) require a teacher with multiple profiles. Of course, he/she must know the subject, but he/she must also encourage reflection and show him/herself as a learner in the classroom, thus establishing a horizontal relationship with the students.

The teacher must encourage different types of learning methodologies for such a heterogeneous herit-age, facilitating the use of different techniques and knowledge from different points of view. The teach-ing/learning process should not focus on solving a specific case, but on providing sufficient tools and knowledge to face the study, analysis and intervention in a highly complex heritage.

## COURSE TYPE

- □ Design Studio (DS)
- □ Intensive Workshop (IW)
- ■ Theory Course (TC)
- □ Seminar (short comprehensive) (SSC)
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## SCALE

- □ Construction Detailing and Interior Design Scale (XS)
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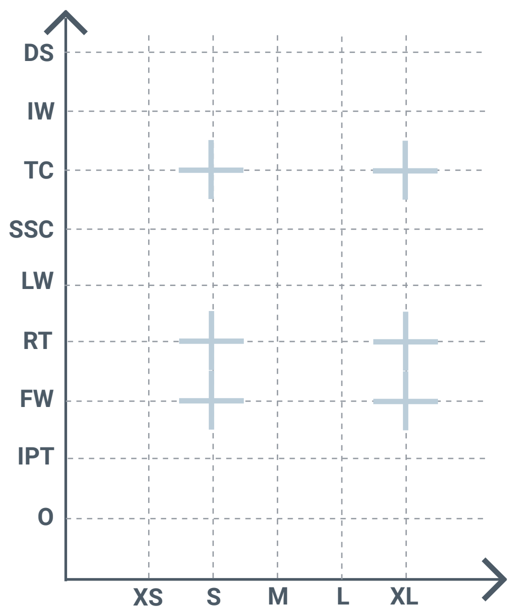


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- □ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- □ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

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- □ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ☐ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

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- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ■ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
- Nasrid Wall, Upper Albayzin, Granada

Authors:
- Antonio Jiménez Torrecillas

Year (period) of the project
- 2002 / 2005: Project
  2005 / 2006: Construction

The wall was built at the beginning of the 14th century. In 19th century, 40 meters of the wall were destroyed by an earthquake. In order to re-establish the linear continuity of the wall and restore the original protection of its interior, a new wall was built on the missing section Although it was not one of the most important military references in Granada, its intervention was very important for the conservation of the wall, to understand the mountainous landscape of the city and to order the use and passage of the neighbours.

This example demonstrates the importance of military heritage from a contemporary perspective and its historical significance for the city as an urban landscape.

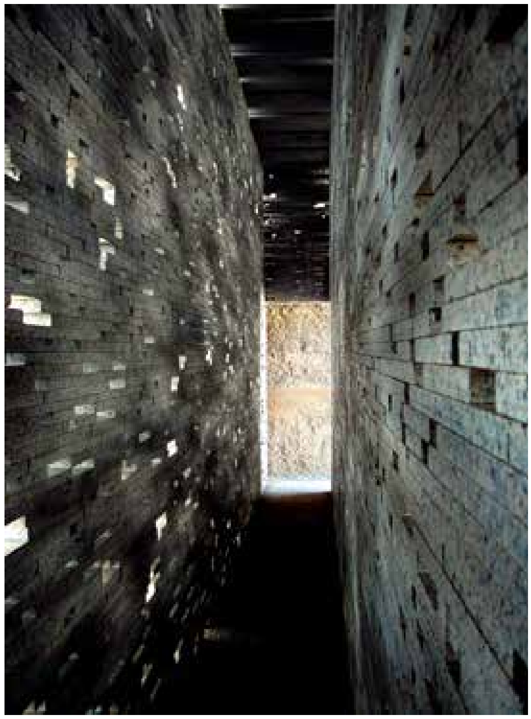

Figure 2. Muralla Nazarí (Nasrid Wall)
*Authors: David Arredondo and Alberto García, 2006.*
*Source: Antonio Jiménez Torrecillas Studio.*

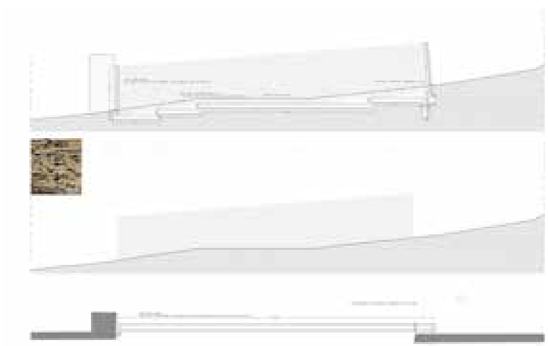

Figure 3. Wall enclosure wall of the wall opening. Section, elevation and plan.
*Author: Antonio Jiménez Torrecillas, 2004.*
*Source: Antonio Jiménez Torrecillas Studio*

Figure 1. Photomontage of the wall before the intervention.
*Author: Antonio Jiménez Torrecillas, 2005.*
*Source: Antonio Jiménez Torrecillas Studio.*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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# DESIGN APPROACHES

Heritage Reprograming

Construction Centred Design

Environmentally Responsive Design

Energy Conscious Design

Climate Sensitive Design

Whole-Lifecycle Design

Carbon Neutral Design

Passive/Active Sustainable Design

Community Building and Representation

Renewable Energy Integration

Historical Urban Landscape- HUL

Design for All in Cultural Heritage

Thermal Comfort Design

Visual Comfort Design

Green Blue Infrastructure

Acoustic Comfort Design

Multiscale Design Approach

UB-FA

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Aleksandra Milovanović

01/18

**design approaches**

statements

# HERITAGE REPROGRAMMING

*репрограмирање наслеђа • Heritage reprogramming • Επαναπρογραμματισμός κληρονομιάς • Reprogramación del patrimonio*

## GENERAL DEFINITION/ EXPLANATION

**Heritage reprogramming (HRP)** is recognized as a growing, analytical and problem-based approach in the design process in which the subject of design/redesign is an entity of urban or architectural heritage.

The original position of the HRP approach in architectural discourse is under the auspices of architectural programming methodology and conceptual framework of the architectural program, raised in specific contextual circumstances of exponential urban development and urbanity growth, including changing patterns of everyday life, industrialization, mass construction, and standardization (Cherry, 1999). In its contextual framework, the programming methodology was created with the aspiration to (a) develop new spatial patterns and typologies in an effective, critical and argumentatively based way and (b) provide high performance and functionality of the space. Through rendering the programming methodology from its origin (functionally oriented and problem-based) (Pena & Fock, 1969) towards its rehabilitation from modernist doctrine (hybrid oriented and process-based approach) (Reeser Lawrence & Schafer, 2006), today, when cities experience limited capacity, one of the central design issues is focused on reprogramming existing typologies.

This design issue also reveals a new nature of programming - the RE nature - encouraging its new rehabilitation from a strictly developmental perspective to one that deals with creating a new functional order within the existing inherited spatial framework with the aim to provide a sustainable configuration of activities, spaces and relationships.

# WHAT?

## CONTENT

In order to understand both the methodological and conceptual nature of the program, the content of HRP curricula should have a threefold perspective: (a) critical analysis and understanding of the context in which the methodology is developed, (b) understanding of architectural programming approaches, and (c) understanding of techniques and programming tools.

**CONTEXT**
- Technological arena: The origin of concepts and methods from information and computer systems;
- Socio-political arena: Creating the physiognomy of the urban landscape;
- Academic arena: Development of participation in the design process; and
- Practical arena: Development of design methods.

**APPROACHES**
- Design-Based Architectural Programming;
- Knowledge-Based Architectural Programming;
- Agreement- Based Architectural Programming; and
- Value-Based Architectural Programming.

**TOOLS AND TECHNIQUES**
- Value Matrix; and
- Diagramming.

Engaging all three thematic frameworks would provide a comprehensive understanding of the programming / reprogramming approach and point to entirely new meanings regarding sustainability and heritage. These meanings would be primarily decoded in relation to functional reprogramming and the intention to make the most of the capacities of the inherited spatial framework and thus reduce the consumption of new resources for the construction or radical transformation of individual buildings or urban entities.

# HOW?

## METHODS

Through recognizing all the features of the HRP approach, learning should include a combined teaching philosophy in order to achieve a high level of knowledge about HRP in the educational process:

(1) *problem-based* represent core, both teaching and learning philosophy, with the ultimate goal to identify specific problem concerning built heritage and solve it through design (problem solving);

(2) *design-based* philosophy makes a logical factor in the HRP education process primarily due to the nature of programming to conduct critical analysis, define design inputs, and enhance research by design approach.

In order to achieve a high level of applicability understanding the HRP approach in the design process, the necessity of case study engagement in educational process is recognized - research on specific spatial polygons, locations and contexts for which reprogramming is carried out. Contextual factors represent the basic input parameters for programming, which is why learning in a real environment and on concrete examples is of great importance for HRP.

# WHY?

## GOALS

Through mastering the proposed threefold content future professionals could develop:
(1) operative knowledge about the main approaches of HRP and its contemporary state-of-the-art,
(2) ability to place these approaches in their professional and experimental design context;
(3) ability to apply different tools and techniques for analysis of built heritage, regarding its urban context and historical development, functionality, and technical development;
(4) ability to recognise contemporary problems concerning urban and architectural heritage and apply problem-based approach in design process;
(5) ability to create and present design solutions based on analysis and evaluation of context through value-matrix and diagramming; and
(6) ability to justify critical point of view in discussions about the evaluation of heritage on different scales.

## TEACHERS' COMPETENCIES

Following the thesis of architectural programming pioneers that "programming like architecture is equally an art and a science", as well as that the role of an "architect programmer" is to identify and articulate indirect values of time and place and categorize these values, a complex professional task is set for architectural educators primarily when it comes to the ability to use and cross varied teaching philosophies (as it explained in methods section). In this sense, the special competencies of teachers in HRP education relate to

(a) *teacher profile 1*: knowledge deliverer and knowledge designer - working within multiple disciplines and strong understanding the relationship of architecture to other disciplines in order to provide the widest possible scope for transferring of program values,

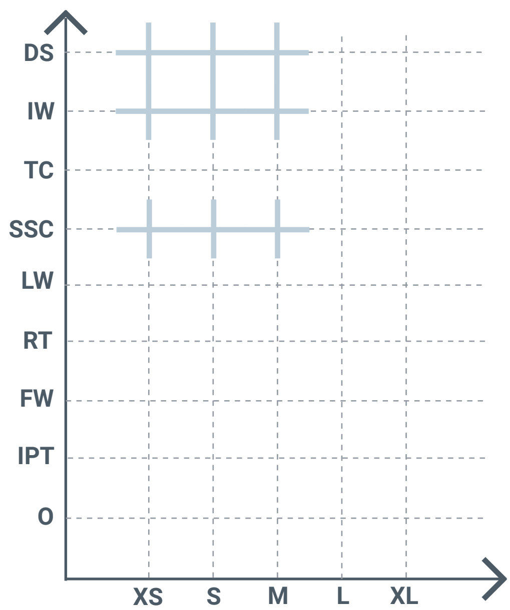
(b) *teacher profile 2*: skills enhancer – the ability to articulate the relationship between students’ analytical thinking and its representation through the intersection of visual methodologies (graphical techniques and tools).

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- □ Research Thesis (RT)
- □ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- □ Urban and Regional Planning Scale (L)
- □ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- □ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
- Impact Hub Belgrade, Serbia

Authors:
- URED Architecture Studio

Year (period) of the project
- 2014

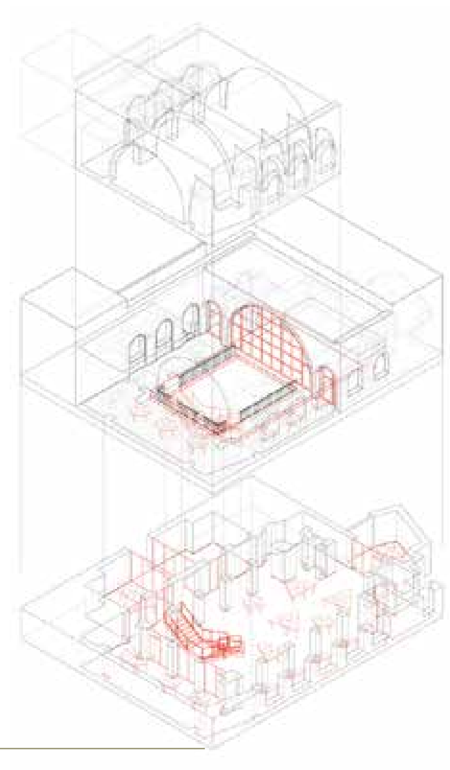


Figure 1.Axonometric

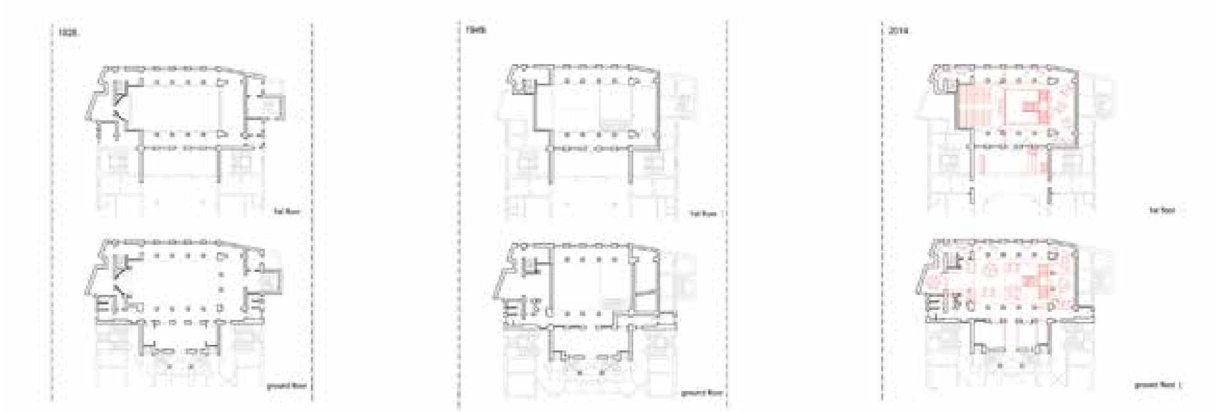



Figure 2. Chronological preview of space function - plans


Figure 3. Interior photos

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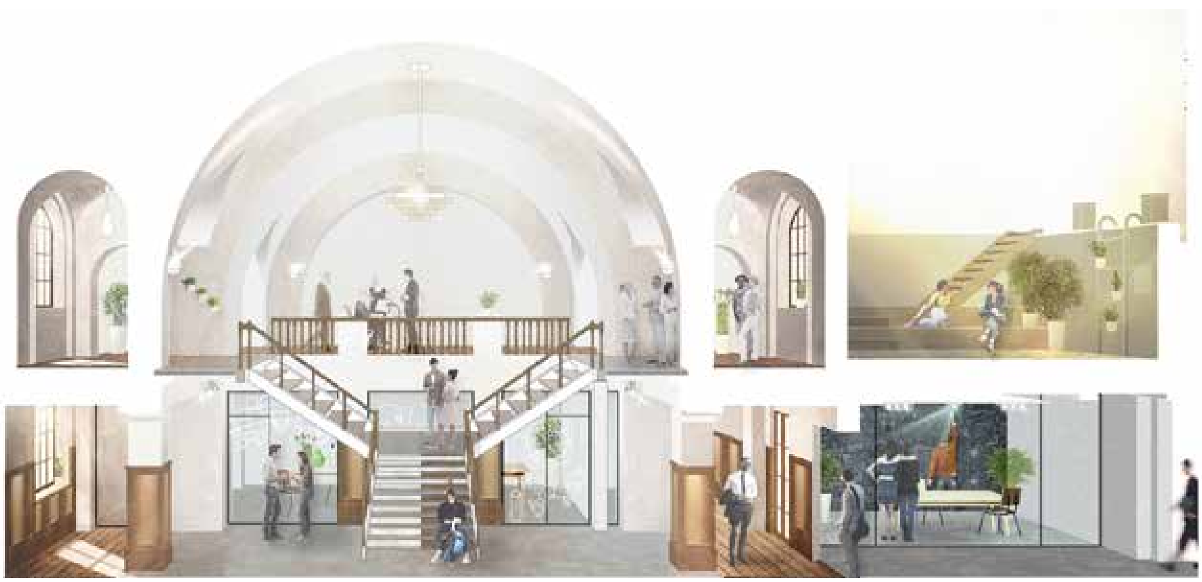

Figure 4. Perspective

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UNIVERSITY OF
THESSALONIKI

AUTH


Iordanis Sinamidis


# 02/18
## design approaches
statements

# CONSTRUCTION-CENTRED DESIGN

*пројектовање усмерено на конструкцију • Construction-Centred Design • Σχεδιασμός εστιασμένος στην κατασκευασιμότητα • Diseño Centrado en la Construcción*

## GENERAL DEFINITION/ EXPLANATION

**Construction-centred design** isn't a style, trend, or a methodology, but a solution-based approach to optimize and emphasize the relationship between architecture and structure, in order to attend pragmatic and functional needs. Architecture designed with this quest creates solutions for problems and opportunities by focusing on matters and contexts, related with bearing structure, structural systems, materials, construction details.

While construction-centred approaches were always an integral part of the work for many architects and engineers, the term is derived from corresponding concepts in design such as "human-centred", "environment-centred", "tech-driven" etc.

In relation to sustainability and heritage, the position of this approach is really significant, as it may affect the economy of construction, the adaptation of contemporary tools (such as Building Information Modelling), the operation of construction site and the future of a built architectural or urban design project in general. Linkages to education could be found through theory courses or field work related with structure, the consideration of material and structure during the design process and the interdisciplinary collaboration needed in such projects.

# WHAT?

## CONTENT

**Construction-centred Design** effectively optimizes architecture, by quantifying and qualifying the sustainability of buildings and monuments, by taking under consideration the best assessment alternative in each case, regarding structural systems, materials and construction details. From educational perspective it is particular significant to link theory with practice. The described term in not only about learning, observing and understanding structure and materials in relation to sustainability and heritage, but also how to apply and integrate them through the design process.

In order to become learners familiar with this approach a series of multiple activities should be included in a curriculum, before and alongside the design studios: lectures and seminars, study and analysis of historical and contemporary structural systems and materials, visits and trips in construction sites and buildings and fieldwork, etc. These activities do not necessarily have to be separate or stand-alone new courses, but they could be integrated in the existing ones. The developing skills of understanding and designing structure in architecture, in combination with technical competences and specialist conservation skills, should be an asset in design studios related to sustainability and heritage.

# HOW?

## METHODS

Regarding **Construction-centred Design** the general teaching philosophy could be described as Design-based, Problem-based, Systematic, Multi-site, Information-oriented, Integrated/inter-professional.

The leading methods and tools should be engaged within the learning process could be questioning and discussing with learners during and after seminars and lectures, showing and discussing built design examples through lectures and studios related with structure, heritage and sustainability, choosing studio design subjects leading to "critical evaluation of cultural heritage”, and "sustainability analysis". All the above are crucial in order to provide learners for "critical thinking”.

The learning styles and activities might relate to Design Project, Seminars, Lectures, Fieldwork, Practical training skills, Internship, Site visits / Study trips. The possible/ appropriate learning environment should be student- or learner-centred.

# WHY?

## GOALS

Regarding **Construction-centred Design**, in the learning/teaching process, the teachers should cover different areas related to theoretical knowledge, tools and practical training. History of Architecture and History of Construction, Materials and Construction, Engineering, Built design projects, Design studios, Restoration projects and studios. The teacher should be conciliatory through giving lectures and explaining structure and materials with critical thinking, but also should be capable of designing structure in different scales in studio classes.

This design approach also requires an integrated, inter-professional and interdisciplinary spirit and encourages the cooperation between different courses, studios, teachers, students and faculties.

## TEACHERS' COMPETENCIES

As it is already reported, most experts adopt a balanced and complementing relationship between theoretical knowledge, tools and practical training. The importance of an adequate theoretical background in combination with the knowledge of methodological and other tools, as well as, their practical application in specific projects is well underlined. This is really important for the **Construction-centred Design**, that's why the teacher to effectively transfer knowledge through this approach, should not only have sufficient theoretical knowledge, but must have practical and pragmatic experience in built and implemented projects. This personal experience is really crucial in order to explain and analyse the approach through specific projects, but it also ensures knowledge and confidence to transmit and inspire the process of thinking and understanding the structure during the design studio.

The profile of the teacher should combine different capabilities: the teacher as a knowledgeable expert, the teacher as a skilful expert, but also the teacher as a lifelong learner.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
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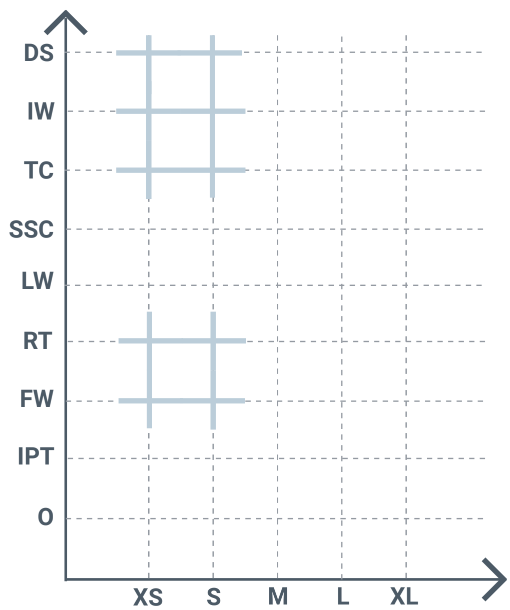


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

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- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
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- □ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

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**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
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- □ understand the cost control mechanisms which operate during the development of a project;
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- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:

- Restoration and Renovation of Historic barracks in the Pavlos Melas metropolitan park (former military camp)

Authors:

- Municipality of Pavlos Melas: Paraskevi Kourti, Asimina Papadiamanti. Major Development Agency Thessaloniki S.A.: Stavros Apotsos, Jordan Sinamides, Stella Psylaki, Michael Nomikos, Dimitris Gatzonis, Dimitris Angelou, Vasilis Karavasilis, George Sourlas, Aris Valtadoros, Nikos Xirofotos.

Year (period) of the project

- 2019-2020

The selected example engages the approach of construction-centred design, since the project idea was to highlight the original structural system and typology of the building. The most important gesture is the removal of all incompatible subsequent interventions and especially those of reinforced concrete. Then the addition of the original building system restores the original typology. Composite glued timber replaces the original wooden frame. The new redesign interventions fit harmoniously into the historic shell and show their modern character, while new materials compatible with the original construction technology are used. The new electromechanical installations upgrade the building energetically without offending it.

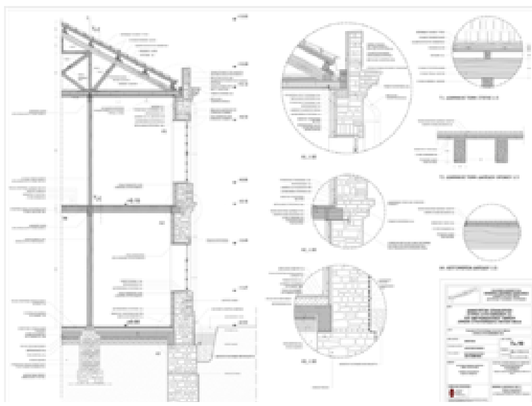

Figure 1. Details of the intervention

*Source: All images and drawings are part of the project and belong to Major Development Agency Thessaloniki s.a.*

Figure 2. Interior view of the main entrance

*Source: All images and drawings are part of the project and belong to Major Development Agency Thessaloniki s.a.*

Figure 3. Interior view of office layout

*Source: All images and drawings are part of the project and belong to Major Development Agency Thessaloniki s.a.*

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University of Cyprus

UCY

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Stavroula Thravalou

03/18

**design approaches**

statements

# ENVIRONMENTALLY RESPONSIVE DESIGN

*енвајронментално респонзивно пројектовање • Progettazione responsabile delle condizioni ambientali • Περιβαλλοντικός σχεδιασμός • Diseño Medioambiental*

## GENERAL DEFINITION/ EXPLANATION

**Environmentally responsive design** caters for adapting to the local climate and geomorphology in order to accommodate the daily needs of the occupants. This design approach utilizes solar energy and related environmental resources to provide indoor and outdoor human thermal and visual comfort. Some of the practices employed refer to the siting of the building, consideration of solar access, collection of rainwater, use of vegetation for shading or wind protection, use of local materials and thermal mass etc. In this respect, vernacular architecture has a lot to teach contemporary architects and engineers, as it has evolved through time incorporating passive design strategies that are specific to a given climate, site, building function and use. Raising awareness regarding the ways of incorporating passive and environmentally- driven design processes has important educative benefits, as such knowledge can be used both in conservation of heritage buildings and complexes, and in new constructions.

# WHAT?

## CONTENT

Vernacular heritage can offer valuable lessons or sustainability, among which environmental adaptability. In order to highlight the particular aspect, environmental design elements may be associated with the rural settlement pattern, building typology, semi-open and open spaces configuration, construction materials and techniques as well as openings' size and position. There is often a strong correlation between constructive - morphological features and climatic contexts. Yet, the interpretation of environmental design practices is linked with aspects related to cultural issues, geographical diversity, local materials and climate. Therefore, the development of critical thinking is imperative in order to proceed with critical evaluation of the surrounding cultural heritage. This involves not only the built manifestations of heritage, but also the intangible ones. For example, various cultural practices are expressed through occupant behaviour. An interdisciplinary approach should be adopted in the teaching process in order for students to be able to highlight the drivers of such behaviour (psychological, cultural, social etc.) among which environmental.

# HOW?

## METHODS

The analytical process for identifying and interpreting environmental design practices involves the analysis of the local climate and the verification of suitable bioclimatic strategies for a given location. For this purpose, several bioclimatic design tools and analysis methods should be used (introduced through lectures and practical exercises). These require a set of skills and competences that students need to develop. Critical thinking is key in the evaluation of the environmental assessment of built heritage. Also, communication skills are also required in order to assess occupants' environmental design practices and other intangible aspects of heritage.

Through group projects such as studio or workshops, undergraduate or postgraduate students can familiarise themselves with this decision-making process in order to assess a) whether the heritage building or site under study comprises environmentally responsive elements, b) the level of involvement of the occupants and the effects of passive design practices in their lives (e.g. on a financial, social and personal level), and c) the ways to preserve and enhance the passive design elements of the heritage building or site.

# WHY?

## GOALS

The learning goals associated with the notion of environmental–aware design are:

- To identify environmental factors influencing vernacular forms and complexes.
- To have the ability to perceive climate attributes such as the sun exposure and the air movement throughout the year.
- To acquire a multi-disciplinary approach and critical thinking in the assessment of both tangible and intangible aspects of heritage
- To learn how to develop designs that work with nature and apply them to conservation projects.

## TEACHERS' COMPETENCIES

A teacher in order to effectively transfer knowledge about environmentally responsive design should:

- Have an excellent knowledge on the climatic analysis tools as well as building physics (air and heat transfer mechanisms, multi-scale understanding of climate phenomena etc).
- Be aware of the use of materials and equipment in survey and conservation practice.
- Have a good knowledge of the international framework regarding conservation principles, local legislation as well as thermal comfort requirements.
- Be able to effectively communicate with other professionals as well as with craftsmen (interdisciplinary).
- Be able to cooperate with traditional communities, agents and governmental bodies.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- □ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- □ Urban and Regional Planning Scale (L)
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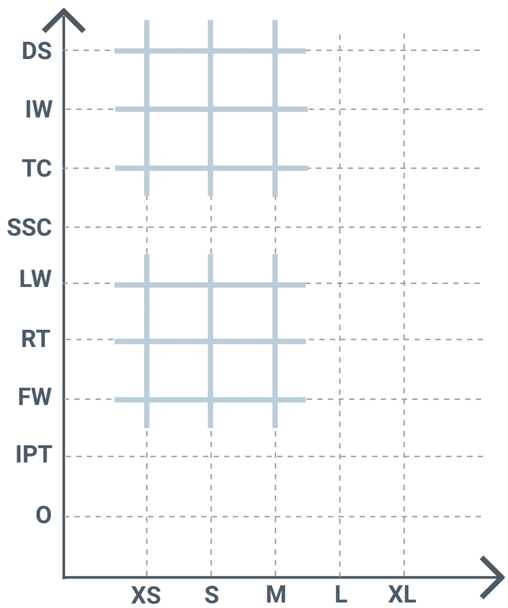


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:
- Restoration of a vernacular residence in Kaimakli, Cyprus.

Authors:
- Giorgos Hadjichristou, Petros Constantinou, Veronica Antoniou

Year (period) of the project
- 2005-2007

The building is an example of Cypriot urban vernacular architecture. It is one storey building made by adobe and stone. The inner courtyard is the main element of the architectural composition. It is a place of social gathering and connects the different areas and functions within the house, playing an important role in the building's passive ventilation, shading and cooling. The entrance is through the semi-open space (iliakos) that connects the street and the courtyard, providing cross-ventilation.

A recent renovation revealed and restored hidden traditional elements while additional spaces were proposed with the aid of mobile vertical elements (Figure 2 and 3). The additional rooms respect the role of the central courtyard and the cross-arrangement of the windows in the entrance hall (iliakos). The semi-open iliakos space can be closed through operable glazed surfaces, according to the climate and the users' needs. This provides a flexibility without compromising the historical, architectural and environmental values of the dwelling.

Figure 1. Central courtyard and semi-open entrance hall of the restored residence in Kaimakli, Cyprus.
*Source: Giorgos Hadjichristou, Petros Constantinou, Veronica Antoniou*

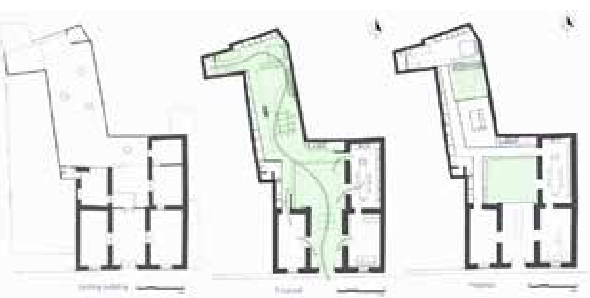

Figure 2. Plan of the restored residence in Kaimakli. Original building (left), restoration plan - open spaces (centre), restoration plan - additional spaces (right).
*Source: Giorgos Hadjichristou, Petros Constantinou, Veronica Antoniou*

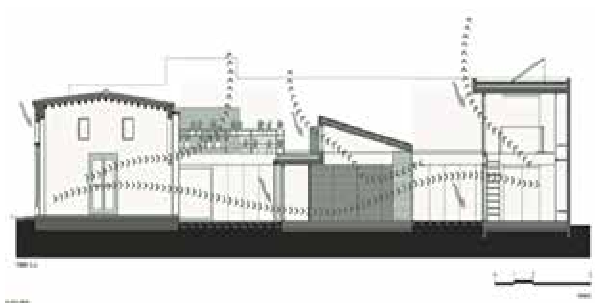

Figure 3. Cross-section of the restored residence in Kaimakli
*Source: Giorgos Hadjichristou, Petros Constantinou, Veronica Antoniou*

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Nataša Ćuković Ignjatović

04/18

**design approaches**

statements

# ENERGY CONSCIOUS DESIGN

*енергетски одговорно пројектовање • Energy Conscious Design • Ενεργειακός Σχεδιασμός • Diseño Energético Consciente*

## GENERAL DEFINITION/ EXPLANATION

**Energy conscious design** mainly refers to design approach which involves holistically addressing energy performance of a building throughout the design process, aiming to minimise energy demands and consequently provide sustainable structure with reduced carbon footprint.

Energy retrofit of existing buildings is seen as one of key strategies in building sector that should contribute to carbon neutral goals (European and worldwide) in the forthcoming years, especially in the regions with accumulated architectural heritage where the pace of new construction is very low.

While **energy conscious design** is still mainly focused on buildings' operating energy, the embodied energy is perceived as an issue that should be further addressed since the share of embodied energy will rise as the operating energy is reduced. The same goes for the energy needed for disassembly of building components, reuse and recycling of materials and products.

The awareness of the scope of issues relevant for **energy conscious design**, as well as adequate design strategies and tools are necessary in the formation of architects that should shape our built environment through 21st century.

## WHAT?

### CONTENT

The students should be introduced to various aspects of energy-conscious design throughout the design process. The emphases should be placed on passive design strategies and the variety of design features applicable on existing buildings. The basic knowledge should cover the introduction to principles of passive design and complementary technical systems, especially the ones that can be integrated into building's design defines. The existing building's passive design potential such as thermal mass, orientation, zoning etc. should be detected, maintained and upgraded if possible while introducing new design features, materials and technologies used for refurbishment/upgrades. The availability of appropriate skills and tools for assessment and verification of energy performance in different design stages enables students to interactively develop their design and track energy-related consequences of various design options.

## HOW?

### METHODS

While the topic is by nature design-based, it requires specific basic theoretical knowledge that should be embedded in the design process. This could be achieved through combination of lectures and simple workshops that accompany the studio work. The presentation of energy-relevant design features should be explored and addressed through infographics, numerical and analytical visuals, communicating both the process and the outcomes of the holistic design approach.

# WHY?

## GOALS

Teaching intentions are focused on design strategy and design tactic with exposure to relevant assessment and verification tools. Design should address primarily programs and building typologies that provide topics and challenges rather typical for given environment.

**Energy conscious design** is embedded in integrative design approach, and relevant knowledge and skills are required as part of general architecture practice. The strategic goals referring to $CO_2$ and greenhouse emissions, enhanced share of renewable energy sources, combined with “renovation wave” and “new European Bauhaus” put the existing building stock in the spotlight and concepts of nearly-zero energy buildings are making their way into European legislation, hence into the everyday practice of future architects.

## TEACHERS' COMPETENCIES

Teaching **energy-conscious design** requires flexible and multidisciplinary approach, both in terms of communicating knowledge to students as in coordinating potential visiting teachers from complementary disciplines and facilitating their active and effective communication with architecture students, mainly in studio and/or workshop environment.

Key competencies should cover the following aspects:
- Theoretical knowledge of building physics
- Theoretical background in bioclimatic design, passive and active design features and relevant technologies
- Practical experience in architectural design which incorporates various passive design strategies
- Active and up-to-date knowledge of relevant tools for assessment and validation of building’s energy performance in various design stages
- Experience in multidisciplinary and integrative design approach

As European regulatory framework is facing dynamic changes in the field of energy efficiency and decarbonisation of buildings (both new and existing), it is very important that teachers take active role in formation and implementation of European directives and relevant national regulations.

## COURSE TYPE

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- ■ Intensive Workshop (IW)
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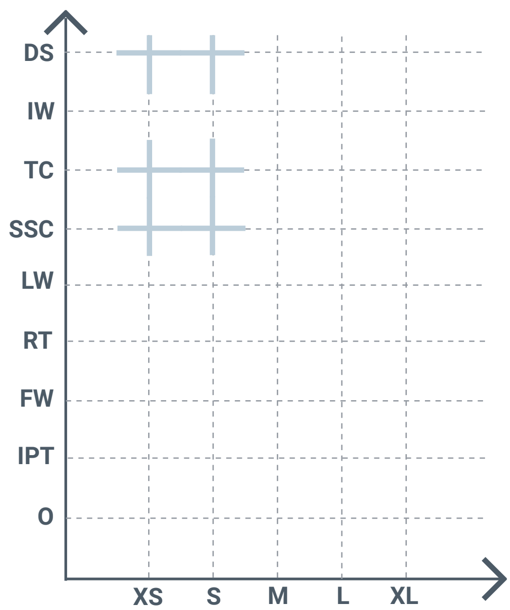


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- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- Transformation of 530 dwellings, block G, H, I, Grand Parc, Bordeaux, France

Authors:

- Anne Lacaton & Jean Philippe Vassal with Frédéric Druot and Christophe Hutin, architects

Year (period) of the project

- 2017
  Design years: competition 2011, completion 2016

Figure 1. Block G exterior before and after the transformation
*photo credit © Philippe Ruault*

The project presents a showcase of sustainable design strategies used for transformation of residential buildings. Energy conscious design approach is embedded in the architectural concept and consequently integrated throughout the design development process. The fact that the project was honoured European Mies Van der Rohe Prize and that the authors are laureates of 2021 Pritzker Prize show that such approach may produce the highly recognized architecture values.

*Through this project, the social housing, built heritage often criticized, shows the example of a relevant and economic transformation that produces - from an existing judged lacking in qualities and seen in a negative way - generous, pleasant and performing dwellings, that renew the typologies and the living conditions, comfort and pleasure, and improve the urban dwelling image. (extract from the authors' description of the project, available at https://www.lacatonvassal.com/index.php?idp=80#)*

Figure 2. Apartment interior before and after the transformation
*photo credit © Philippe Ruault*

Figure 3. Transformation scheme / work process
*source fiche projet (available at https://www.lacatonvassal.com/data/documents/20181214-165201LV_FchA4_HabitatTrans-fo_GRP_bd.pdf )*

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05/18

**design approaches**

statements

# CLIMATE-SENSITIVE DESIGN

*климатски сензитивно пројектовање • Climate-sensitive Design • Κλιματικά Ευαίσθητος Σχεδιασμός • Diseño Climático*

## GENERAL DEFINITION/ EXPLANATION

**Climate-sensitive design** is the approach to architectural design which is routed in the understanding of specific climate conditions and its impacts on building design. Primarily it is related to issues of achieving human comfort in buildings through building design that is aligned with local climate conditions. It is similar to terms *climate responsive design*, *bio-climatic design*, or *design with climate*, last referring to the seminal book of Victor Olgyay (1963, Princeton University Press). This design approach today is considered a basis for energy-efficient, green or sustainable design. It is also deeply connected to studies of vernacular architecture as part of the built heritage, since vernacular architecture is always climate sensitive and offers lessons for contemporary reinterpretation. It may appear strange to even highlight the importance of education on **climate-sensitive design**, since it should be the basis for any design, but too many decades of uniform design solutions across different climates gave poor results in terms of energy efficiency and quality of buildings, so it is necessary to emphasize the importance of these issues.

# WHAT?

## CONTENT

**Climate-sensitive design** is a very wide topic, addressing the issues of sustainable design from urban scale to a very detail level including building technologies. Thus, it is necessary to integrate in the curriculum broad range of theoretical principles of climate related comfort issues, as well as numerous case studies which show different scales of applications of **climate-sensitive design** principles. Learners should be able to detect, through their own analyses, principles which were applied, in different climates, and in problems of different scales (from urban planning issues to technical detailing) which contribute to the better response of built fabric to the climate conditions. In relation to heritage, the main focus of this term is on detecting the mentioned principles in the vernacular heritage.

# HOW?

## METHODS

Methods of teaching **climate-sensitive design** should be based on the systematic, integrated and problem-based teaching philosophy. Systematic, because issues of climate related comfort issues need to be the knowledge basis for further sustainability analysis which are the main tool for developing critical thinking on this design principle. Preferred learning environment is therefore knowledge and assessment-cantered. As an elective theoretical course, this subject should provide interdisciplinary knowledge basis for integrating principles of climate sensitiveness into the design process. Through numerous case studies students should develop a method for recognizing these principles in analysed projects. Finally, in a design studio, these principles should be investigated and integrated in the new design concept proposal.

# WHY?

## GOALS

Teaching **climate-sensitive design** needs to start with the interdisciplinary, systematic and knowledge-based course. This is where students learn the basis of climate science, comfort issues in buildings in different climates, lessons from vernacular building heritage in these terms and their integration in the contemporary buildings. Students should, through these lessons, learn to recognize design elements which are related to climate sensitiveness, and further practice to detect them through case studies of projects in different climates and of different scale. A very important step in this process is detecting false claims of climate-sensitive project features, undercovering green washing practices. Finally, students should be able to integrate principles of **climate-sensitive design** into their own project assignments.

## TEACHERS' COMPETENCIES

*- Teacher as a knowledgeable expert –bringing experts from disciplines of climate science, building physics and environmental science for building the knowledge basis*

*- the teacher as a lifelong learner – the analysed design approach is highly interdisciplinary and vibrant, so a constant search for new problems, examples and approaches needs to be nurtured*

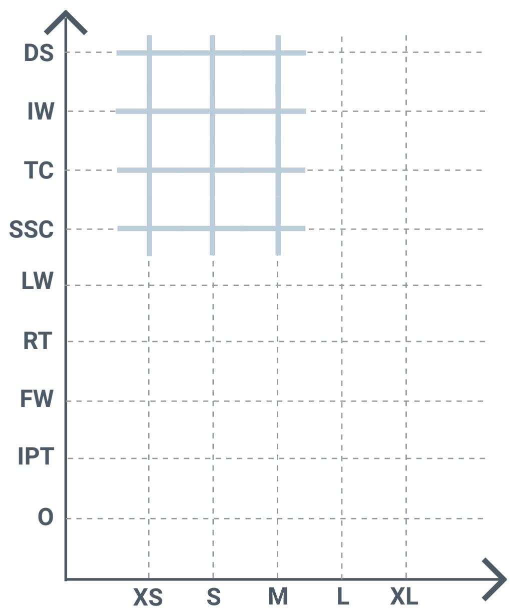
- the teacher as a classroom actor – encourage students to play detectives in recognizing appropriate design principles in the analysed case studies, revealing common greenwashing elements

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ☐ Research Thesis (RT)
- ☐ Field work (FW)
- ☐ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ☐ Urban and Regional Planning Scale (L)
- ☐ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ☐ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ☐ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ☐ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ☐ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ☐ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ☐ theories of urban design and the planning of communities;
- ☐ the influence of the design and development of cities, past and present on the contemporary built environment;
- ☐ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- [x] the needs and aspirations of building users;
- [x] the impact of buildings on the environment, and the precepts of sustainable design;
- [x] the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- [ ] the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- [ ] the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- [x] the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- [ ] the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- [ ] the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- [ ] the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- [ ] the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- [ ] strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- [x] the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- [x] principles associated with designing optimum visual, thermal and acoustic environments;
- [x] systems for environmental comfort realised within relevant precepts of sustainable design;
- [ ] strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- [ ] critically examine the financial factors implied in varying building types, constructional systems, and specification
- [ ] understand the cost control mechanisms which operate during the development of a project;
- [ ] prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- [ ] the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- [ ] the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- [ ] the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

////////////////////////////////////////////

Project title and location:
- Typical solar house *Andromeda*

Authors:
- Vladimir Lovrić

Year (period) of the project
- 1982.

Typical solar house Andromeda, by architect Vladimir Lovrić, was designed in 1982, and since then built in over 100 locations across former Yugoslavia and worldwide. Among the most published examples of build houses are the one built in Belgrade (Višnjička Banja) and Slovenia (Jesenice). Slight variation in the colour of the brick façade gives a different appearance of the same design project. Climate-sensitive design was incorporated through the concept of solar house, designed for moderate climate, maximizing the use of solar energy for passive heating. This design concept is reflected through all design elements: spatial organization, volume, materialization and formal characteristics.

https://www.ekokucamagazin.com/arhitektura/odrziva-arhitektura/

Figure 1. Typical solar house Andromeda, built in Belgrade Belgrade (Višnjička Banja)
*Source: https://www.ekokucamagazin.com/arhitektura/odrziva-arhitektura/*

Figure 2. Typical solar house Andromeda, built in Slovenia (Jesenice)
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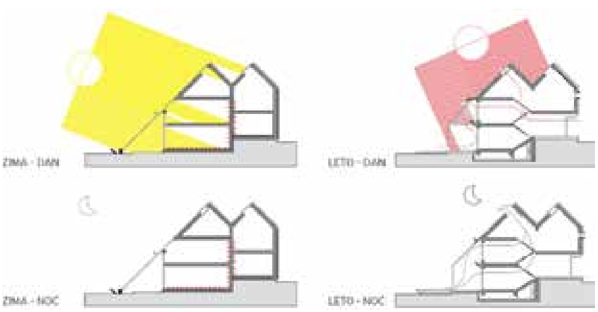


Figure 3. Bioclimatic schemes, winter and summer day/night regime illustrated through typical section
*Source: https://www.ekokucamagazin.com/arhitektura/odrziva-arhitektura/*

Figure 4. Floor plans
*Source: https://www.ekokucamagazin.com/arhitektura/odrziva-arhitektura/*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

*//////////////////////////////////////////*


[1] Olgay, Viktor (1963). *Design With Climate: Bioclimatic Approach to Architectural Regionalism.* Princeton, New Jersey, United States: Princeton University Press.

[2] Heschong L. (1979). *Thermal Delight in Architecture.* Cambridge, Massachusetts, USA: The MIT Press.

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[4] Szokolay, S. V. (2008). *Introduction to architectural science: the basis of sustainable design.* Oxford, UK: Architectural Press, Elsevier Ltd.

[5] Hausladen G., Liedl P., De Saldanha, M. (2012). *Building to suit the climate- A handbook*. Basel, Switzerland: Birkhäuser.

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# design approaches

statements

# WHOLE-LIFECYCLE DESIGN

*пројектовање животног циклуса простора • Whole-Lifecycle Design • Σχεδιασμός εστιασμένος στον κύκλο ζωής της κατασκευής • Diseño Integral del Ciclo de Vida*

## GENERAL DEFINITION/ EXPLANATION

**Whole Lifecyle Design** is a design approach that looks at environmental sustainability holistically. With the increased energy efficiency of buildings during their use phase, attention has shifted on embodied impacts. Embodied impacts are those happening during the extraction of raw materials, manufacturing of finished building materials and components, their transportation to the building site and construction operations. Embodied impacts also include repairs, restoration and refurbishment of buildings, as well as their end of life that include, deconstruction/demolition, disposal and reuse/recycling of building components and materials. Shifting the attention on these aspects when designing a building (or a part of it) is a radical change that requires considering the layout and appearance of the building, the materials it is made of, and the way the building will be managed and eventually demolished at the end of its useful life cycle. Such aspects should be considered during all the reiterations and progressive refinement of a building design.

# WHAT?

## CONTENT

The principle of **Whole-life cycle design** is valid and applicable to every design project in architecture. Since the concept of architecture in itself resides in building, the environmental consequences of building actions have to be known and carefully planned for. Knowing the basics of life cycle assessment is key to understand the significance of the problem that will have a growing relevance in the future year, as it can be seen by the recent (2021) implementation of the *European Framework Level(s)* that applies life cycle assessment to all the design stages of a building, from conceptual design, through details, to the verification of the built building. Key to transform an ex-post LCA analysis in an ex-ante Whole lifecycle design activity is the aptitude of the designer to intervene and be critical on his/her own design decisions.

# HOW?

## METHODS

**Whole-Lifecycle Design** is a design methodology that depends on an integrated design approach where multiple disciplines (architectural design, building physics, building technology, structural design, etc.) impact on the way the building is designed, built, used and ultimately dismantled. Key to a complete understanding is the *EN 15978 standard "Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method"*, that describes how buildings should be looked at from a Lifecyle perspective.

Learning **Whole-Lifecycle Design** requires an understanding of the cited standard, and a proactive critical evaluation of possible constructive alternatives to find an optimized solution. Learning activities for the students can consist in:

- Asking them to quantify the LifeCycle energy and carbon of a simple building (ie: their house, a pavilion, *etc.*)
- Asking them to compare alternative designs for that given building, assessing the impact of different design choices
- Asking them to evaluate reusing previous structures and materials to design a new building.

# WHY?

## GOALS

Most importantly, **Whole Lifecycle Design** allows a more comprehensive understating of building sustainability, shifting the focus from the use-phase and associated energy consumptions, to the construction, management and demolition phase of a building.

Also, **Whole Lifecycle Design** should be the core activity of students in architectural faculties. In fact, this approach gives importance to the stages of the building process (construction, maintenance, refurbishment, dismantling, etc.) that are the “core” of the architect’s job, since they involve the architect’s design activity and the interaction with all the other players of the building industry. Understanding this, allows architects and future professionals to embed an expertise that is gaining momentum both from a market-driven and from a legislative point of view and to stand out in the professional word as the carrier of a complex knowledge.

## TEACHERS' COMPETENCIES

- The teacher should be, of course, a knowledgeable expert in the field but should also have, ideally, a true passion and an important belief in building sustainability

- The teacher should be able to guide students in an in-depth critique of their own work, and in the constant and reiterated analysis of the environmental consequences of their design actions

- The teacher should be knowledgeable in construction techniques, to understand and guide students in achieving their design ideas by adopting alternative routes, using different materials and different building techniques. Ideally the teacher should have a strong building-site experience, and a strong capacity to visualize the design implications of alternative solution.

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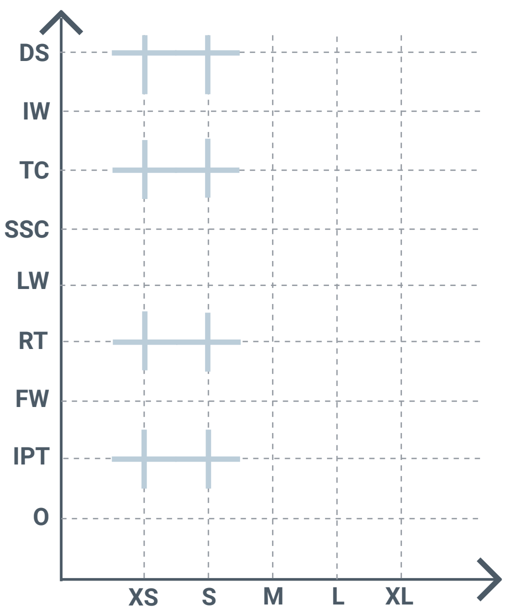


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- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

//////////////////////////////////////////

Project title and location:

- European Cultural Heritage Green Paper

Authors:

- Europa Nostra in partnership with ICOMOS

Year (period) of the project

- 2021

The *European Cultural Heritage Green Paper* clearly expresses that the concept of sustainable use and reuse of the built heritage is a key strategy to reduce the ecological footprint of the built environment, postponing or even cancelling the environmental costs associated with demolition and new construction.

For instance, replacing high-quality historic wooden windows (that also embed an aesthetic beauty given by time and fabrication techniques that don't exist anymore) with new widows (made in timber, PVC or aluminium) may save some energy in the daily use of the building, but doesn't take into account the energy needed for their fabrication. Similarly, the renovation of an existing building can represent a more sustainable option, from a life cycle perspective, that building a newer one, even if it performs very well from an energy point of view.

To this regard, the role of routine maintenance and good conservation practices is key in reducing greenhouse gas emissions. This is now facilitated by new tools and practices, such as predictive maintenance and preventive conservation, to enhance the resiliency of historic and heritage buildings

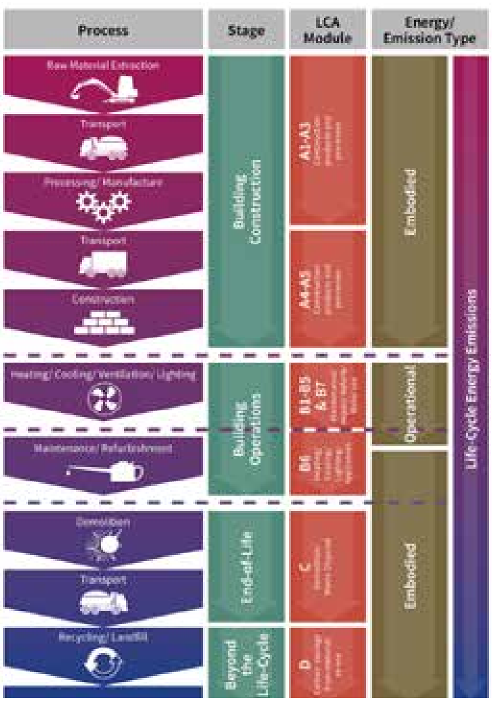


Figure 1. The stages of a whole life cycle of a building and the respective processes included in Life Cycle Assessment
Source: Carrig, 2019.

The life cycle carbon emissions of these case studies were assessed according to three scenarios:

- **Base-case (before)**: assumes that the building continues to operate as normal, and the cumulative operational carbon emissions increase steadily over time.
- **Refurbishment (after)**: the reuse and upgrading of the existing building to improve energy efficiency. In carbon terms, this results in an initial increase in embodied emissions, but an immediate decrease in operational emissions compared to the Base-case.

Victorian Terrace Refurbishment

| Building option | Base-case | Refurbished | New build |
|---|---|---|---|
| Assumed climate | [illegible] | [illegible] | [illegible] |
| Year built | [illegible] | [illegible] | [illegible] |
| Building height | [illegible] | [illegible] | [illegible] |
| Floor area (m²) | [illegible] | [illegible] | [illegible] |
| Summary of works | None | [illegible] | [illegible] |
| Structure | [illegible] | [illegible] | [illegible] |
| Envelope | [illegible] | [illegible] | [illegible] |
| Glazing (%) | [illegible] | [illegible] | [illegible] |
| Heating system (efficiency) | [illegible] | [illegible] | [illegible] |
| Wall R-value (m²·K/W) | [illegible] | [illegible] | [illegible] |
| Roof R-value (m²·K/W) | [illegible] | [illegible] | [illegible] |
| Air Change Rate (l/s. person) | [illegible] | [illegible] | [illegible] |

Figure 2. The life cycle carbon emissions
Source: Carrig, 2019.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

///////////////////////////////////////////


[1] Crawford, R., (2011). *Life Cycle Assessment in the Built Environment.* Oxford, England: Routledge

[2] Dodd, N., Donatello, S. & Cordella, M., (2021). *Level(s) – A common EU framework of core sustainability indicators for office and residential buildings, User Manual 1: Introduction to the Level(s) common framework* (Publication version 1.1)

[3] Dodd, N., Donatello, S. & Cordella, M., (2021). *Level(s) – A common EU framework of core sustainability indicators for office and residential buildings, User manual 2: Setting up a project to use the Level(s) common framework* (Publication version 1.1)

[4] Hauschild, M., Rosenbaum, R. K., & Olsen, S. (2018), *Life Cycle Assessment. Theory and Practice.* Berlin, Germany: Springer

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[6] Pomponi, F., De Wolf, C., Moncaster, A. (2018), *Embodied Carbon in Buildings.* Berlin, Germany: Springer

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07/18

**design approaches**

statements

# CARBON NEUTRAL DESIGN

***$CO_2$ неутрално пројектовање • Progettazione Zero emissioni • Σχεδιασμός ουδέτερου ανθρακικού αποτυπώματος • Diseño Sin Emisiones***

## GENERAL DEFINITION/ EXPLANATION

*A Carbon-Neutral activity "inputs and outputs the same amount of carbon, resulting in a net-zero carbon footprint" (Stouhi 2019).* A Net-zero building is *"a building whose total amount of energy consumed is equivalent to or less than the amount of renewable energy created on site or used by the building. The design of net zero buildings aims to reduce greenhouse gas emissions and dependency on nonrenewable resources and requires a holistic design approach that recognizes features and systems including solar orientation, natural ventilation, and site-specific geological and climactic characteristics" (Kallipoliti 2018).*
Carbon neutrality in buildings can be attained through climate responsive design, systems energy efficiency improvement and renewable energy integration. **Carbon neutral design** applies mainly to architectural design and construction detailing for buildings which consume energy (heating cooling ventilation lighting equipment etc); however, it can also be applied to larger scale, settlements or urban areas through urban planning, transportation measures and common systems installation. Minimalization and elimination of $CO_2$ emmission by building use is a major target of sustainable design for the mitigation of the greenhouse effect, global warming and climate change, and highly significant in the sustainable redevelopment of modern heritage urban environments and traditional settlements.

# WHAT?

## CONTENT

Carbon neutrality in buildings and settlements can be pursued through climate sensitive design, energy efficient systems and renewable energy production; appropriate strategies, in terms of efficiency, are highly dependant on regional and site specific climate features. Elimination of GHG emissions is of high interest within urban areas and settlements for mitigating climate change. In cultural heritage buildings cases, energy efficiency strategies need to comply with limitations for heritage qualities preservation. Moreover, carbon neutrality may become a target for sustainable redevelopment of existing urban building stock featuring modern cultural heritage.

In architectural education emphasis is needed on strategies and methods for achieving net zero targets in building and urban design and on the limitations inherent in cultural heritage built structures and settings. Crucial details are building physics, material properties, life cycle assessment, regulations, energy efficient systems and renewable energy integration. The multiple net-zero built projects and case studies worldwide, highlight the global significance of the topic and provide abundant information and technical details.

In architecture studies the curriculum may include:

- Building physics and material properties in relation to cultural heritage preservation
- Life cycle assessment in relation to carbon footprint
- Regulatory framework for net-zero buildings and culrutal heritage buildings
- Energy efficiency assessment methods

# HOW?

## METHODS

Within architectural studies **carbon neutral design** in cultural heritage built environments can be addressed through critical evaluation of heritage qualities for preservation, and through analytical evaluation of climatic parameters, structural and material properties and energy needs to identify appropriate strategies for energy efficiency and net-zero carbon footprint. In particular, the energy efficiency and net zero target may be approached both from the architectural design perspective and from engineering systems and renewable energy sources perspecitve therfore requires interdisciplinary cooperation. Evalution of the efficiency of design projects can be approached through assesment of design scenarios with analytic simulations and calculations.

- General teaching philosophy: Problem-based, Information-driven, Design-oriented, Integrated/inter-professional, Systematic, Symbiotic (Community-based, Multi-site).
- Leading methods and tools which should be engaged within the learning process: critical evaluation of cultural heritage qualities in buildings, urban areas and settlements, sustainability analysis from an interdisciplinary perspective, case study projects, analytic assessment through computational tools simulations and calculations
- Learning styles and activities: group work, interdisciplinary cooperations, site visits, computational tools application, prototyping
- Possible/appropriate learning environment: student-centred; knowledge-centred; design-centred.

# WHY?

## GOALS

The teaching intensions focus in providing the basic principles on theory, strategy and methodology regarding **carbon neutral design** and in promoting consolidation of knowledge through experimentation with design proposals and evaluation. Specific areas to be covered in the learning teaching process include Theory, Design strategies, Systems efficiency and Renwable energy integration, legislation, applications to cultural heritage buildings and settlements and evauation methods. More specifically:

- theory, strategies, concepts, compatibility of new technologies and materials with traditional and historic ones
- design (bioclimatic, climate responsive design, energy loads reduction)
- technical (climatology, electromechanical systems efficiency, renewable energy sources, energy sharing)
- legislation (restrictions and benefits)
- social (user health and comfort, environmental quality, climate change resilience)
- economic (cost benefit analysis, payback period)
- assessment tools and methods (computational analysis)
- Best practices

## TEACHERS' COMPETENCIES

In order to effectively transfer knowledge about **carbon neutral design** the teachers' competences and profile could feature:

- the teacher as a knowledgeable expert, in the fields of architecture, urban design, building physics snd regulatory framework
- the teacher as a skilful expert, able to combine theoretical principles with design practice, information from other disciplines especially engineering and analytic computational tools
- the teacher as a lifelong learner able to update skills and knowledge in current times of rapid global developments, technological innovation and immersion of analytic tools, and to participate in interdisciplinary teams.

Courses' content about **carbon neutral design** could combine:
- theoretical aspects of building physics materials and lifecycle analysis
- contemporary legislation, regulations and requirements, national and international
- reflections on the different social, economic, and environmental impacts of cultural heritage preservation with renewable energy integration and interventions in traditional settlements or modern heritage urban environments
- on site and building survey to evaluate potential strategies and methods to implement on cultural heritage buildings and sites
- introduction of analytic computational tools and methods for energy needs assessment
- application of the basic principles and methods on cultural heritage buildings and assessment of the design proposals

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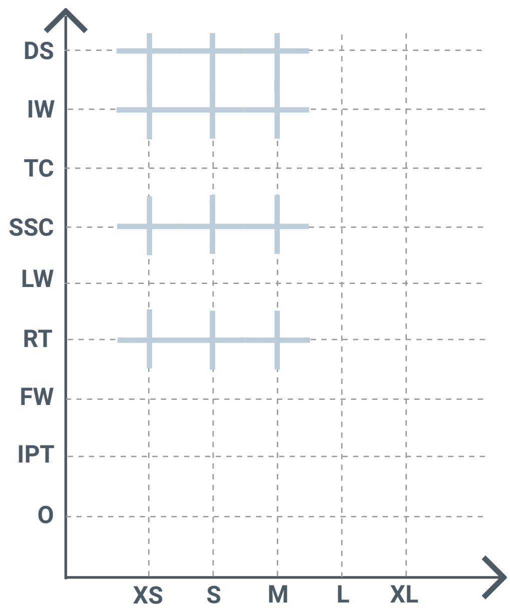


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**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ☐ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ☐ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ☐ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ☐ theories of urban design and the planning of communities;
- ☐ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ■ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

✕ TILOS- Technology Innovation for the Local Scale, Optimum Integration of Battery Energy Storage

Tilos, Greece

Authors:

✕ TILOS project consortium

Project Coordinators: University of West Attica

Year (period) of the project

✕ 2015-2019

For small off grid islands in the Aegean which rely on fossil fuels for their energy demands and conventinal energy is expensive and unstable, carbon neutrality allows to build resilience in energy and local economies.

In Tilos, a clean energy project consists of a hybrid power plant with battery storage, supplying energy to approximatelly 100 households and a charging staton for hybrid vehicles. The power plant consisting of a wind turbine installed in 2017 and small scale solar panels covers most of the energy needs in summer and produces surplus for winter, while sets the basis for enhanced resilience through buldings energy efficiency improvements.  Plans for an electric ferry for connections to larger neghibouring islands indicate goals for further carbon neutral development.

https://insideclimatenews.org/news/02032021/greece-clean-energy-islands-tilos-hybrid-power-battery-storage/
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UCY

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Aimilios Michael
Chryso Heracleous

08/18

# design approaches
statements

# PASSIVE/ACTIVE SUSTAINABLE DESIGN

*Пасивно/ активно одрживо пројектовање • Passive / Active Sustainable Design • Παθητικός / Ενεργητικός Αειφορικός Σχεδιασμός • Diseño Sostenible Pasivo/Activo*

## GENERAL DEFINITION/ EXPLANATION

Sustainable design through passive means refers to the integration of nature elements in architectural design seeking the adaptation of buildings to the specific climatic and environmental conditions of each area in order to improve the overall comfort conditions of users - thermal, visual, acoustic comfort, air quality inside the building shell and minimizing its energy requirements. These strategies are divided into heating, cooling, daylighting, natural ventilation, and microclimatic strategies. Passive systems collect and transport heat by non-mechanical means, and operate on the energy available in the immediate environment (based on bioclimatic design principles and strategies of shading, natural ventilation, thermal mass etc). The passive design has been incorporated to a greater or lesser extent in vernacular architecture for thousands of years.

Active design strategies use energy to keep the building comfortable and include high-efficiency electrical, plumbing, HVAC, and other systems, which are designed to have small environmental footprints. These strategies include mechanical system components such as air-conditioning, heat pumps, radiant heating, heat recovery ventilators, and electric lighting. Building automation also helps to the improvement of energy and thermal performance of the building. Active strategies also include systems that generate energy such as solar electric and solar thermal panels, wind turbines, and geothermal energy exchangers. Buildings that incorporate passive features combined with basic low tech active elements, e.g. fans, are termed hybrid buildings.

Heritage buildings usually incorporate in their design several passive design strategies and can moderate external weather conditions based on building materials, thermal mass, moisture buffering, landscape, siting, overall form, horizontal and vertical communication among interior spaces, and exterior wall openings. Recently the rehabilitation of buildings require upgrade of building services systems while respecting the original design and materials and meet applicable codes and occupant needs. Over the last decades, there is a growing interest on the energy retrofit of historic buildings, as they do not always comply with contemporary concepts regarding thermal comfort (Martínez-Molina et al. 2016) and face the challenge of resilience in the light of climate change (Košir 2019). A balanced application of sustainable design principles through passive and active means is often the final goal of an efficient retrofit strategy. The main principles of the passive and active strategies should be incorporated in undergraduate and postgraduate courses and includes theoretical teaching, site visits, design and analysis of relevant issues.

# WHAT?

## CONTENT

**Passive/active sustainable design** is frequently found in education as it represents the main principles of vernacular architecture. Historic and heritage buildings form a substantial part of the building stock all over the world and their preservation is of paramount importance for social, economic and environmental reasons. The key element of heritage buildings is the quality of design, which is the primary reason of their listed status. “Protection” includes preservation of the architectural elements, space and materials of the original buildings that incorporate passive and active sustainable design. The restoration of such buildings should follow the same idea, safeguarding heritage. The main idea of passive/ active sustainable design and heritage buildings is the minimization of energy efficiency and building’s environmental impact. Through the learning process students can acquire the following skills:

- Knowledge of the main strategies of passive and active sustainable design

- Understanding of the passive and active sustainable design of heritage buildings

- Incorporate passive and active design in a case study building and evaluate their performance in terms of energy and comfort

# HOW?

## METHODS

Firstly, the learning should be knowledge-centred through lectures in order to examine in depth all the available passive and active design strategies that can be incorporated in the heritage buildings. Then the students can be divided into groups and each group has to select a historic or heritage building as a case study building to apply a design-based course in order to understand in practice the term. After a site visit, the students should be able to have critical thinking and critically evaluate the passive and active strategies incorporated in the architectural design and then to be able to integrate new passive and active design strategies for the improvement of thermal comfort and energy performance of these buildings. After that, the students should have the ability to make a sustainability analysis using the life cycle assessment analysis identifying the environmental, economic and social aspects of these interventions. The evaluation could be made using software simulation.

# WHY?

## GOALS

The teacher firstly should cover all the available passive and active sustainable design strategies and help the students to understand what of these strategies are eligible for integration in the heritage buildings in order to re-use existing building extending the life of a building and its components or rehabilitating damaged building materials. Passive sustainable design should include passive solar design, thermal mass, shading systems, natural ventilation, high albedo roofing, vegetation, insulation materials, airtightness, high-efficiency windows, permeable paving materials, rainwater collection. The active sustainable design include mechanical system components such as air-conditioning, heat pumps, radiant heating, heat recovery ventilators, and electric lighting. In addition, it include systems that generate energy such as solar electric and solar thermal panels, wind turbines, and geothermal energy exchangers.

The main teaching intention of the course related to passive and active sustainable design is a holistic presentation of the main strategies through lectures, practice through design project their application in a case study building and examination of the methodological tools for the evaluation of their performance through software simulation. Additionally, life cycle assessment could be applied to examine the overall sustainability impact of passive and active design.

## TEACHERS' COMPETENCIES

A teacher in order to effectively transfer knowledge about **passive/active sustainable design** should

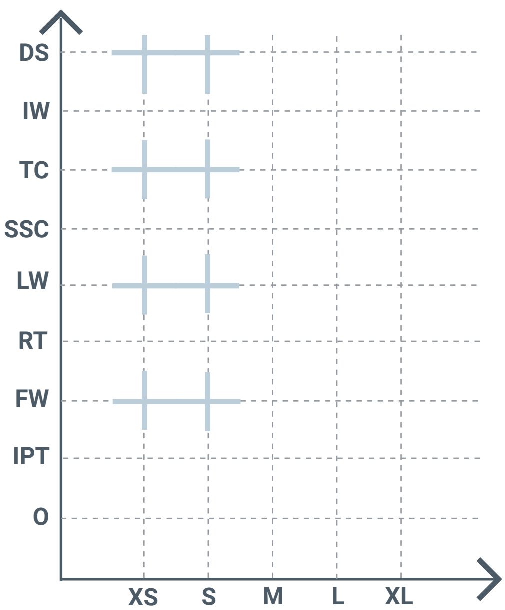
- Be a knowledgeable expert of the main principles of the passive/active design
- Have the ability to critically understand the architectural design of heritage buildings
- Combine theoretical and practical knowledge on this field
- Know the methods of evaluation of passive and active strategies

## COURSE TYPE

- ■ Design Studio (DS)
- □ Intensive Workshop (IW)
- ■ Theory Course (TC)
- □ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- □ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- □ Urban Design Scale (M)
- □ Urban and Regional Planning Scale (L)
- □ Landscape Scale (XL)




## LEARNING OUTCOMES

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- □ the way in which buildings fit into their local context.

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- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

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- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
Mariahilferstrasse, Vienna, Austria

Authors:
Trimmel Wall Architekten ZT GmbH
Johann-Hörbiger-Gasse 30, 1230 Vienna - Mauer

Year (period) of the project
2014-2018

The existing historic residential units' property was built between 1850 and 1899 and it is located in the 15th district of the city of Vienna on the corner of outer Mariahilfer Straße and Denglergasse. In a recent renovation and energy retrofit in 2018 by Trimmel Wall Architekten ZT GmbH, the old structure, as well as the facade were preserved, while both passive and active sustainable design practices were incorporated. Regarding the passive systems, the application of airgel high-performance insulation plaster (as the effect of 15 cm thick conventional insulation board) was implemented in a part of the building. In the rest of the building, 20 cm of hemp insulation was applied. The new roof of the loft was constructed using highly efficient technical standards that meet passive house standards. Moreover, aubergine-colored textile webs of roll-out sunscreen were attached to the windows to reduce the cooling demands. With regards to the active sustainable design, there was a changeover from a decentralised gas heating system to a centralised system in which a solar thermal system is integrated. Moreover, controlled ventilation of the residential units is provided. A solar thermal system, which is located on the roof of the building, supports the hot water supply. The new solar thermal system did not interfere with the conservation compatibility.

Figure 1. External view of the building.
*Source: https://www.hiberatlas.com/en/mariahilferstrasse--2-62.html*

Figure 2. A solar thermal system located on the roof of the building.
*Source: https://www.hiberatlas.com/en/mariahilferstrasse--2-62.html*

Figure 3. Roll-out sunscreen attached to the windows to reduce the cooling demands.
*Source: https://www.hiberatlas.com/en/mariahilferstrasse--2-62.html*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Milica Milojević

09/18

**design approaches**

statements

# COMMUNITY BUILDING AND REPRESENTATION

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*грађење заједнице и заступање • Progettazione partecipata • Δημιουργία / Ενίσχυση κοινοτικής οργάνωσης και εκπροσώπησης • Hacer comunidad y su representación*

## GENERAL DEFINITION/ EXPLANATION

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**Community building (and representation)** is a field of creative and interdisciplinary practices directed toward the creation or enhancement of community and local identity between individuals within a regional area (such as a neighbourhood) or with a common interest. It is sometimes encompassed under the field of community development. (Koumpis and Moumtzi: 2010). *Community developing* is a term for communities of interest within local areas (Cowan, 2005:79).
Although this approach was applied and developed first in housing policies (seventies of the 20th century), with cultural pluralism and the application of *Local Agenda 21* locally led, active participation and social relevance become dominant characteristics of the twenty-first century's democratized urban planning and cultural heritage practices.
In relation to sustainability and heritage, community building is related to activities of involving individuals and groups in process of heritage practice and practical care of material culture heritage with all its associated significance for local people (Chitty, 2018). Responding to the need for deeper understanding of the outcomes of heritage conservation, this design approach examines the engagement of local people and communities beyond the expert and specialist domain. Involving the public in different stages of heritage management is gaining ground and its contribution can actually become the key for creating sustainable conservation models.(*Tapini & Gómez-Robles, 2017:...)*.
In education in the field of sustainability of the built heritage this approach is developing through students' workshops in collaboration with citizens, communities and experts and international projects workshops.

# WHAT?

## CONTENT

Community building approach is applied in education process through collaborative planning and participatory design. Equally important is the active and timely involvement of experts, students and residents and the result should be visible both in the engagement of the local population and stakeholders and in the improvement of public space and sustainable preservation of locally significant built heritage.

Concept note on possible content: Identification of locally significant built heritage as focal and starting point of urban regeneration of public, semi-public or common spaces in neighborhoods through field work and workshop activities. Visual representation of neighbourhood specificity and presentation of built heritage to public (exhibition in local public space). Conceptualisation of public space regeneration (design activities). Collaboration with locals and international experts on developing sutable models of participation. For example, if we are dealing with modernistic settings of neighbourhood, the starting point will be elementary school and key actors in community building process will be school children, parents, teachers and school representatives. Students will have field work skills, develop communication skills and capacity for interdisciplinary team work on heritage representation, conservation and regeneration. Together with the local community, students will raise awareness of the urban heritage of their neighbourhood. Understand and promote the role of different expertise in protection and development of built heritage.

# HOW?

## METHODS

Teaching philosophy is Community-based. Action Research applied at neighbourhood level is driven by the idea of **Community Building and Representation**. Learning methods and tools engaged in learning process provide knowledge for critical evaluation of cultural heritage because it is necessary to raise awareness of the common urban heritage and encourage interest in sustainable preservation and promotion of locally significant and globally recognizable urban and architectural heritage. Learning process is based on visual and verbal learning styles and activities of mapping, drawing, interactive modelling and discussing issues of representation and sustainable reconstruction of urban heritage. Learning environment is community-centred which is why most of the activities are organized in the field, in a specific neighbourhood in direct and indirect contact with citizens.

# WHY?

## GOALS

**Community building and representation** of urban heritage of planned and informal neighbourhoods provide opportunity for transfer of knowledge and skills between experts, students and neighbours. The main domains are small scale projects of urban reconstruction in neighbourhoods. For mentoring this kind of educational process it is important to have participation experience in community or citizens actions for improvement of local public spaces and collaboration with international experts on heritage conservation activities. The main objective is to develop proposals for sustainable reconstruction and management of semi-public spaces based on mutual recognition of urban heritage, both from residents and future experts. Training on field with hands on conservation and reconstruction experiences for students and citizens.

## TEACHERS' COMPETENCIES

In order to effectively transfer knowledge about **community building and representation** the teacher understands spatial and social relations in which the heritage of material culture exists and the importance of problem setting, critical reflection, visioning and creative thinking in planning sustainable future and effecting change for neighborhoods. The teacher acts as social agent, who contributes to the development of partnerships and an appreciation, of interdependence, pluralism, mutual understanding. Applying holistic approach (Integrative thinking and practice), esspecially the interdependent nature of relationships within the present generation and between generations, as well as those between rich and poor and between humans and nature, the teacher is someone who is inclusive of different disciplines, cultures and perspectives, including indigenous knowledge and worldviews and Inspires creativity and innovation and engages with learners in ways that build positive relationships.

## COURSE TYPE

- [ ] Design Studio (DS)
- [x] Intensive Workshop (IW)
- [ ] Theory Course (TC)
- [ ] Seminar (short comprehensive) (SSC)
- [ ] Laboratory work (LW)
- [ ] Research Thesis (RT)
- [x] Field work (FW)
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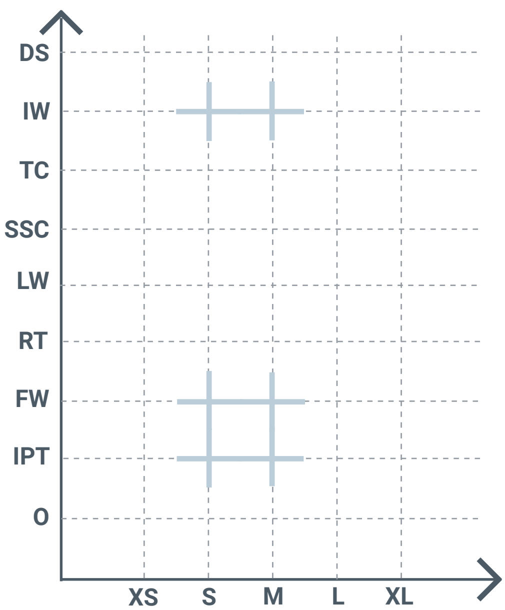
- [ ] Other (O)

## SCALE

- [ ] Construction Detailing and Interior Design Scale (XS)
- [x] Architecture: Buildings Scale (S)
- [x] Urban Design Scale (M)
- [ ] Urban and Regional Planning Scale (L)
- [ ] Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [x] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [ ] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [ ] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [x] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [ ] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [ ] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- [x] how the theories, practices and technologies of the arts influence architectural design;
- [ ] the creative application of the fine arts and their relevance and impact on architecture;
- [x] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- [x] theories of urban design and the planning of communities;
- [ ] the influence of the design and development of cities, past and present on the contemporary built environment;
- [ ] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- □ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ■ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- □ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ■ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:
✕ Martos project Workshop

Paartners Institutions:
✕ ICCROM, the University of York, the University of Jaén, the City of Martos Council, Department of Culture, ADSUR, IAPH, IPCE

Year (period) of the project
✕ 2011

*Martos project Workshop* is relevant example of community building for sustainable conservation and urban regeneration based on locally significant cultural heritage. This restoration educational workshop was realised in Martos in Andalusia, during six week work on stone conservation of Fuente Nueva fountain by international experts' team of Diadrasis, local craft-school, local municipality and citizens of Martos. On the principles of exchange economy, the local community provided housing, food, technical support and the human power of the local craft school, while NGO Diadrasis conserved the cultural heritage of the community with a team of international experts and participants, offering, at the same time, international awareness of the place. The workshop itself and the multiple interactive activities, turned the curiosity of the wider public into interest. Upon completion of the workshop, and as a demonstration of community building, citizens' especially young population become active guards of their heritage and Local municipality applied proposed guidelines for the urban regeneration of the surrounding area, to ensure visual connection of the fountain with the park.

Figure 1. Martos project Workshop
*Source:© 2012 Diadrasis (Source: http://www.diadrasis.org/workshop/the-martos-project )*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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University of Cyprus

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Aimilios Michael
Constantinos Vassiliades

# 10/18
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# RENEWABLE ENERGY INTEGRATION

*интеграција обновљивих извора енергије • Renewable Energy Integration • Ενσωμάτωση ανανεώσιμων πηγών ενέργειας • Integración de Energías Renovables*

## GENERAL DEFINITION/ EXPLANATION

For a renewable energy system to be considered "integrated" in a building, it must meet certain specific characteristics (Barkaszi & Dunlop, 2001). Building Integrated Solar Systems (BISS) are considered to be solar systems that are a functional part of the building structure or are architecturally integrated in its design (Peng, Huang, & Wu, 2011), replacing conventional building materials on building shells (Petter Jelle, Breivik, & Drolsum Røkenes, 2012). From an architectural point of view, the integration of such a system is a functional part of the central idea of the building without distinguishing the system array from the whole, as a foreign body (Vassiliades, 2018). Their integration into the building shell may be distinctly perceptible, but to be considered successful, the integrated systems must be fully integrated into the overall architectural and energy design of the building (Hagemann, 2005). Regarding the built heritage, a holistic approach to the entire design process starting from the assessment of the aesthetic and architectural impact in relation to BISS energy efficiency solutions, needs to be proposed. This should be based on an assessment of the benefits of energy efficiency, heritage impact and intervention cost, highlighting opportunities and constraints (Rosa, 2020).

It should also be noted that other technologies can be integrated, such as geothermal systems or biomass, with the most prominent technologies to be thin building integrated photovoltaic films on buildings, spraying of water on roofs, placement of buried pipes as heat exchangers, for preheating and cooling the ventilation air.

Finally, heritage buildings may often have limited potential for renewable energy systems integration, due to legislative protection status or dense urban surrounding. Thus, the enhancement of energy optimization should not only focus on the building level, but also at the urban fabric in proximity. The importance of decentralised heat production from PV-thermal (PVT) collectors and collective seasonal underground storage has gained interest over the last decades.

# WHAT?
## CONTENT

In order to mitigate the effects of climate change, planning authorities are forced to contend with several requirements such as the European Energy Performance of Buildings Directive (EPBD), which requires drastic changes on the energy performance of the built environment. All these, lead to the extensive use of solar energy, which is a crucial factor in renewable energy production that could cover a building's energy needs, through the integration of active solar systems.

Heritage and historic buildings are often included in the conversation, given that they are an important part of the built environment. However, the building integration of these systems can often alter the historic character of the building. Thus, it is crucial for the educational procedure to develop a methodology and investigate how building integration can affect historic buildings, and which are the methods to achieve a sustainable way of integration, and in which cases.

# HOW?
## METHODS

The educational procedure should be design-based, and have an inter-professional and inter-discipline character, in order for the student to be able to fully understand the subject and its several challenges, which in this case originate from several and different scientific fields.

The learning process should implement several educational tools. These should improve the students' ability to critically evaluate the cultural heritage, while it will make them able to perform a sustainability analysis in an interdisciplinary manner, in order to be able to deal with the integration of active solar systems on historical buildings in an objective way. A possible course should be design studio based, mainly focusing on case studies and on the renovation of an existing historic building, on which a renewable energy system will be integrated. The learning environment of the course should be knowledge centered, focusing on the proper analysis of the subject, in order to help students fully understand the logic and the possible methodologies that need to be applied in the realization of such projects.

# WHY?

## GOALS

The teacher in a course of this type should initially give special emphasis on whether the students are aware of heritage in the built environment. When is a building considered historic, which restoration methods are acceptable, and which methodology should be followed for the sustainable restoration of a historic building? At the same time, students should understand what "building integration of renewable energy systems" is, and which are the several systems' limitations and operating characteristics.

Based on these, the student will be asked to study, design and present their own proposal for the restoration of a historic building with an integrated renewable energy system, and through this process they will be able to understand the challenges and limitations derived by the subject. At the same time, they will be called upon to find design solutions, thus cultivating their critical perception of the issue, managing its controversies. The aim of the course will be for the student to acquire the theoretical, technical and design tools required to be able to cope with similar cases, both in theory and in practice.

## TEACHERS' COMPETENCIES

The controversy of the subject and the absence of a clear methodology for the integration of renewable energy systems in heritage buildings, require a teacher that could act as a knowledgeable and skilful expert, who can provide interdisciplinary information to the students. The following characteristics can determine a teacher's ability:

- An architectural background with deep understanding of the historic built environment.
- Basic knowledge of the renewable energy systems, in terms of design, energy behavior and efficiency.
- Ability and experience to manage a studio-based design course.
- Research experience in related subjects, so that they can be constantly in touch with the state of the art of the subject.
- Freelance practice experience in related topics, to be able to understand and explain the challenges arising from the subject's controversies and technical special characteristics.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- ■ Research Thesis (RT)
- □ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
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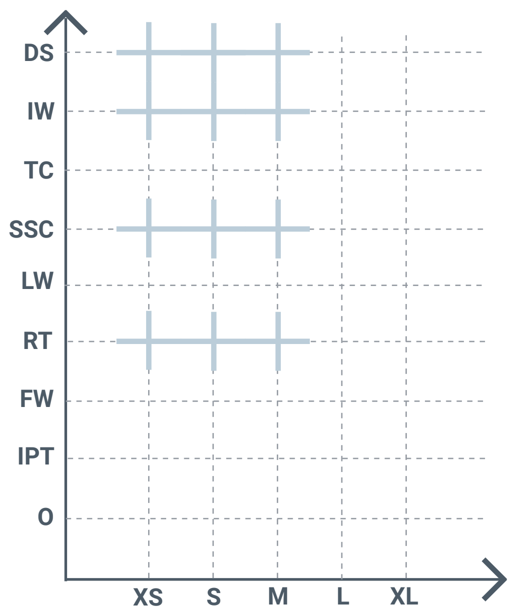


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
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- ☐ the needs and aspirations of building users;
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- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:
- The municipality of Ales, France

Authors:
- Jean François Rougé, architect

Year (period) of the project
- 2001-2004

The municipality of Ales, France, used the vestige of an 11th century listed building to create a tourist Office, based on the design of the architect Jean François Rougé. The architect chose to use the arched recessions of the three-bay building morphology to create solar spaces, thus extending the office surface. A PV-system was integrated to each of these three bays, with an isolating double glazing mounted behind it. The cavity between the PV-system and the double glazing has a width of 11 cm. The warm air inside the solar space (cavity) is used for heating purposes of the building in the winter. The solar chimney effect created during the summer, contributes to the buildings' passive ventilation (available online: http://www.pvdatabase.org/projects_view_detailsmore.php?ID=126 and http://rnb.architectes.free.fr/R%26B_architecture/OT_ALES_1.html).

Figure 1. The main elevation of the building, with the integrated system.
*Source: Heinstein, P., Ballif, C., & Perret-Aebi, L. E. (2013). Building integrated photovoltaics (BIPV): Review, potentials, barriers and myths. Green, 3(2), 125–156. https://doi.org/10.1515/green-2013-0020.*

Figure 1. View of the building where the integration of the PV-system in the three bays can be seen.
*Source: https://www.france-voyage.com/villes-villages/ales-9535/bureau-information-touristique-ales-5799.htm*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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# HISTORICAL URBAN LANDSCAPE (HUL) APPROACH

*историјски урбани предео • Historical Urban Landscape (HUL) • Ιστορικό Αστικό Τοπίο • Paisaje Urbano Histórico*

## GENERAL DEFINITION/ EXPLANATION

The term **Historic Urban Landscape (HUL)** has two considerations, as a concept and as an approach. The HUL concept refers to the urban area resulting from a historical layering of cultural and natural values and attributes, which transcends the notion of "ensemble" or "historic centre" to encompass the overall urban context and its geographical setting. This concept broadens the dimension of the concept of the historical ensemble to speak of the "heritage city", where all the attributes of the context in which it is located are taken into account (both geographical and built) and, on the other hand, the citizen himself, who is seen as the protagonist from the point of view of social participation. Along these lines, the HUL approach is a way of working in the city where the key factors in these new management models are multidisciplinarity, placing the citizen and different actors at the centre of the process and the commitment to heritage management based on the identification of heritage values from a landscape approach.

# WHAT?

## CONTENT

Taking into account the current global situation where the lack of resources is becoming more and more pressing, it is important that the student considers heritage as another resource to achieve urban, economic and social sustainability. This brings a real problem into the classroom, making students aware of the challenges and social commitments they will have to face in the near future. Learning how to manage the heritage city based on the approach of the **Historic Urban Landscape** Recommendation takes into account the issues that threaten it (gentrification, climate change, tourism, massive urbanisation...), the complexity of its attributes and values due to the amount of layers of information that make up this urban landscape, as well as the variety of actors and disciplines involved. The aim is to provide students with the tools and knowledge to tackle heritage management from this broad and holistic perspective, working in interdisciplinary teams. For this reason, bringing the HUL approach to the classroom is considered necessary and highly topical.

# HOW?

## METHODS

The complexity of handling this concept implies the development of different teaching learning methodologies such as: Problem-Based Learning (PBL), Service Learning (SL), Cooperative Learning (CL), lectures / expository method and case studies. The teaching strategy used is one in which the student is the main character of the learning process, where in addition to acquiring responsibilities and critically approaching the contents provided in the subject, he/she exchanges points of view and experiences with his/her classmates.

The learning activities are the reading of selected texts to understand the dimension of the concept and the approach, and the implementation of the approach in a concrete case study in a given city. The theoretical-practical class is always combined as a workshop, where other disciplines and professionals are invited to share with the student their experiences in implementing the HUL approach. It is a learning environment focused on the knowledge of the socio-economic reality of the heritage site and the consideration of the community and other disciplines in the identification of such sustainable development strategies.

# WHY?

## GOALS

Working with the HUL concept and approach implies that the student should have a clear understanding of the evolution of the concept of heritage throughout the 21st century, as well as an in-depth knowledge of the different types of heritage recognised today in the different international texts and charters. This conceptual reflection allows the student to identify the different attributes and heritage values, so varied, that characterise heritage in the current context. Once they are aware of the conceptual complexity of working in a city, it is important that they understand the social dimension of urban heritage, how it influences the quality of life of its inhabitants, its vulnerability to climate change and development, and how to use it to generate socio-economic development. It is also considered essential for students to be able to assume and identify the perception of citizens, to incorporate the discourse of other disciplines in their diagnosis and proposal and, above all, to work as a team. Working from this perspective implies a significant open-mindedness, as well as the disappearance of prejudices in relation to urban heritage.

## TEACHERS' COMPETENCIES

As this is such a complex term, the competences that should characterise the teacher should be very varied:

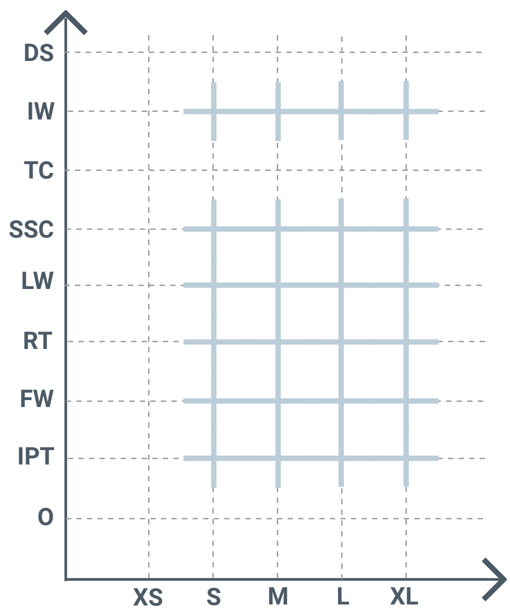
- Extensive knowledge of the concept on the part of the teacher.
- Experience in its implementation (field work).
- Communication skills. To make the transmission of complex concepts easy.
- Motivate the student to get involved in the task.
- Dynamise teamwork.
- Facilitate the implementation of the concept in any context.
- Be sensitive to the learning process in common with the learner.
- Capacity to manage information and bibliographic resources.
- Recognition of diversity and multiculturalism.
- Sensitivity to environmental issues.
- Creativity.
- Critical reasoning.
- Adequate knowledge of the architectural, urban and landscape traditions of Western culture, as well as their technical, climatic, economic, social and ideological foundations.
- Adequate knowledge of the relationship between cultural patterns and the social responsibilities of the architect.
- Adequate knowledge of urban sociology, theory, economics and history.
- Ability to carry out preliminary studies for intervention in the built heritage.
- Ability to develop intervention proposals for the transformation of the environment, architecture and urban planning.

## COURSE TYPE

- [ ] Design Studio (DS)
- [x] Intensive Workshop (IW)
- [ ] Theory Course (TC)
- [x] Seminar (short comprehensive) (SSC)
- [x] Laboratory work (LW)
- [x] Research Thesis (RT)
- [x] Field work (FW)
- [x] Internship Practical training (IPT)
- [ ] Other (O)

## SCALE

- [ ] Construction Detailing and Interior Design Scale (XS)
- [x] Architecture: Buildings Scale (S)
- [x] Urban Design Scale (M)
- [x] Urban and Regional Planning Scale (L)
- [x] Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [ ] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [x] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [x] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [x] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [x] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [x] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

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- [ ] the creative application of the fine arts and their relevance and impact on architecture;
- [ ] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

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- [x] theories of urban design and the planning of communities;
- [x] the influence of the design and development of cities, past and present on the contemporary built environment;
- [x] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- □ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:

- Reassessment of the Cultural and Natural Heritage of the city of Cuenca from the strategies of sustainable development supported in the Recommendation on the Historic Landscape. Cuenca, Ecuador.

Authors:

- University of Cuenca

Year (period) of the project

- 2014-2016

The case of Cuenca in Ecuador is one of the cases that at the international level has been working on the implementation of the HUL approach. It involves the design of a methodology to implement the 6 steps proposed by UNESCO in its Action Plan based on the context and socio-economic situation of the place. It is the first pilot city in Latin America to implement the Recommendation, and the result is a series of heritage strategies for sustainable development agreed by the citizens, the University and the Municipality, and which, in general terms, include the main ideas for drawing up a Strategic Plan for the city.

Figure 1. Cuenca area
*Source: Julia Rey-Pérez, 2015*

Figure 2. Citizen participation work
*Source: Julia Rey-Pérez, 2015*

Figure 3. State of conservation of Cuenca architecture
*Source: Julia Rey-Pérez, 2015*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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José Peral López

12/18

# design approaches
statements

# DESIGN FOR ALL IN CULTURAL HERITAGE

*пројектовање за све у културном наслеђу • Accessibilità per i Beni Culturali • Διαχείριση Πολιτιστικής Κληρονομιάς χωρίς αποκλεισμούς • Diseño Universal en Patrimonio Cultural*

## GENERAL DEFINITION/ EXPLANATION

In March 2021, the European Commission took a further step in accessibility and inclusion with the new Strategy for the Rights of Persons with Disabilities 2021-2030.All have a right to equal opportunities, have good conditions in the workplace and to live independently but also to participate fully in the life of their community; a life without barriers. The latter includes the enjoyment of cultural heritage and therefore universal accessibility for people with physical, sensory and cognitive disabilities. This objective was already reflected in the text of the 2006 United Nations Convention on the Rights of Persons with Disabilities, which also highlighted the importance of mainstreaming disability issues as an integral part of relevant strategies of sustainable development. Article 2 of this standard includes the content of the term universal design: the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialised design. Together with this term, it also includes the term reasonable accommodation, which is of great importance in actions on the built heritage. In addition to this term, the term "reasonable accommodation" is also included, which is of great importance in actions on the built heritage.

# WHAT?

## CONTENT

The communication resources are, between territory and society and over time, an ultimate as well as an immediate link. They could simplify the complex issues of both and their relations in a real manifestation of landscape as an identification of contemporary culture itself.  Such communicative devices, also known as artistic-technical hybrid products, must have both theoretical and practical components to ensure accessibility and comprehension for all people. This requires addressing Design for All at all stages of heritage management and making improvements to enhance site security and to allow, as far as possible, access for visitors with physical or sensory disabilities. Appropriate graphic representation and display of heritage values require efforts in wayfinding and easy reading.

Creating and piloting new innovative courses/group of courses/extracurricular activities within existing study programs, the action must be combined: transversal by introducing subjects or activities in certain courses and on the other hand and specifically, the characterisation of people with disabilities, accessibility in communication and support devices (ICTs).

# HOW?

## METHODS

The guiding principle for raising awareness of an inclusive society, and in particular training in Design for All, is to support the development of new training actions. These should be aimed at university teaching staff, both in basic concepts (disability, accessibility, reasonable accommodation) and in the application of **Design for All in cultural heritage** courses. The recent but growing incorporation of sustainability issues can be a reference for the incorporation of Universal Accessibility in heritage subjects

We are aware that teaching innovation is designed based on the identification and prioritization of learning needs, which is why we must encourage the active participation of the student, abandoning the master class. We propose models where this method is inverted; Flipped Learning, thus encouraging autonomous and collaborative learning. In past courses, the implementation of the application, shown in the example of this sheet, was carried out with several evaluation sessions by people with cognitive disabilities belonging to associations such as Plena Inclusión Andalucía.

# WHY?

## GOALS

The main competences to be acquired by the student are the ability to synthesise the knowledge acquired and to develop specific tools for its communication. The former can be defined as the ability to gather and interpret relevant data in the field of the built environment. This enables them to make judgements that include a reflection on relevant social, scientific or ethical issues, in this case concerning inclusion. The second is related to the ability to transmit information, ideas, problems and solutions to a non-specialist audience, deriving directly from this the training in Design for All.

In order to achieve the acquisition of the first capacity it is necessary to extend the training and knowledge of reports and works that have related subjects such as sustainability and disability (In Relevant Literature: *SDG and Disability. Work Plan* (2018)) or heritage and accessibility (In Relevant Literature: *Standard UNE 41532 IN*). Learning from this perspective will allow to address the management of cultural heritage in all its phases and for all people

## TEACHERS' COMPETENCIES

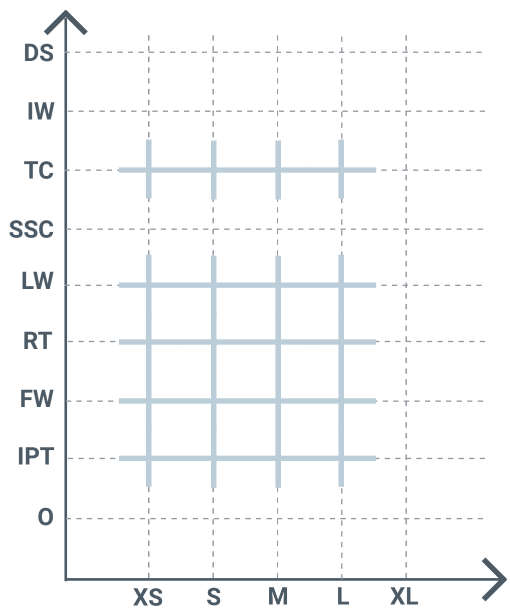
The term design for all, as part of the objectives of Universal Accessibility, is widely used in areas directly related to disability. Nevertheless, linking it to terms such as sustainability and cultural heritage is a challenge. If it is also to be considered as an effective transfer of knowledge, the list of competences becomes very broad. In a general framework, they are basic:
- Transmit an enterprise spirit in the face of new challenges
- Conveying the desire for a fully inclusive society
- Ensure the full and equal participation of people with disabilities in society.
In a specific framework:
- Capacity to work and teach with different methods of analysis and synthesis
- Communication skills. To make the transmission of complex concepts easy
- Extensive knowledge of the concept Design for All or Universal Design, on the part of the teacher.
- Provide the learner with methods to apply knowledge to professional life by developing arguments and solving problems
- Provide the ability to apply graphic procedures to the representation of spaces and objects.
- Transmit appropriate knowledge of ecology and sustainability and the principles of conservation of energy and environmental resources
- Transmit appropriate knowledge of architectural, urban and landscape traditions and their technical, climatic, economic, social and ideological foundations.
- Provide ability to carry out preliminary studies for intervention in the built heritage.
- Provide ability to develop intervention proposals for the transformation of the environment, architecture and urban planning.

## COURSE TYPE

- □ Design Studio (DS)
- □ Intensive Workshop (IW)
- ■ Theory Course (TC)
- □ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- ■ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- □ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- □ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- □ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

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- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- □ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
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- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## APPLICATION EXAMPLE

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Project title and location:
- Heritage Itineraries for Intelectual Disabilities (virtual reality)

Authors:
- Department of History, Theory and Architectural Composition, University of Seville

Year (period) of the project
- Course 2018-2019

In February 2017, the ministers' deputies adopted the Recommendation CM/Rec (2017)1 to member States on the "European Cultural Heritage Strategy for the 21st century" (Strategy 21) which was officially launched in Limassol, Cyprus in April 2017. One of the lines of action proposed is the recognition of good practices in each of the three components of the strategy: social component, territorial and economic development, and knowledge and education. We propose as example the *Heritage itineraries for intellectual disabilities* within action S2: Making heritage more accessible. The project is based on the use of extended reality educational resources developed by architecture students from the University of Seville.


Figure 1. Website Strategy 21Good Practice
Source: https://www.coe.int/en/web/culture-and-heritage/-/heritage-itineraries-for-intellectual-disabilities


Figure 2. App *Heritage Itineraries for Intellectual Disabilities*
Source: http://ra.sav.us.es/index.php/realidad-virtual/2-itinerario-por-sevilla

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Ana Radivojević

# 13/18

## **design approaches**
statements

# THERMAL COMFORT DESIGN

*пројектовање топлотног комфора • Thermal Comfort Design • Σχεδιασμός για Θερμική Άνεση • Diseño del Confort Térmico*

## GENERAL DEFINITION/ EXPLANATION

Thermal comfort is considered as the type of comfort linked with a sensation of complete physical well-being.

It could be explained as a thermally neutral environment in which there is no feeling of discomfort, and the thermal equilibrium of the body is achieved. Perception of the thermal environment is always individual. It is influenced by several environmental factors, such as air temperature, relative humidity, air velocity, and radiant temperature, but is also dependent on the individual, i.e. personal factors such as metabolic rate, clothing, health condition, etc.

Achievement of optimum thermal comfort reflects on well-being, as well as on the health of a person, but it also influences energy use and carbon emission that use of a building causes.

Designing for thermal comfort becomes a constitutional part of many sustainable design strategies and approaches and does not refer only to new buildings, but is an inevitable task of any renovation and rehabilitation of built heritage.

Awareness regarding the need to achieve a certain level of thermal comfort is becoming a part of building regulations, but in the first place, it puts the focus on an adequate selection of building materials and structures, understanding the building's behaviour, and knowledge of passive architectural measures.

# WHAT?
## CONTENT

Thermal comfort could be considered an important goal of contemporary architectural practice and refers both to new buildings and the existing ones, especially in the case of renovation and rehabilitation. Hence, the problem is described as the need for designing for thermal comfort.

Thermal comfort is one of the indicators of the indoor environment quality concept and is often analyzed and observed in correlation and harmony with other types of comfort and other aspects of the IEQ concept.

Provision of adequate thermal comfort requires knowledge and understanding of building behaviour by the means of building physics, adequate selection of building materials, and respect of thermal zoning, natural ventilation, orientation, solar gains, and other relevant passive design strategies.

Consequently, thermal comfort could be studied in different ways and contexts:

- as a special subject of study;
- as a part of the IEQ concept as a topic;
- as a goal that is assessed by the elements of building physics which is a topic itself;
- as a goal that is achieved by using various passive architectural measures and strategies that are included in the design process.

# HOW?
## METHODS

Designing for thermal comfort is a problem-based and information-oriented topic. This teaching approach refers to all the mentioned ways of addressing the problem of thermal comfort as a part of the wider perspectives.

However, as a goal and a part of a certain sustainable design strategy, thermal comfort becomes a part of a design-based problem. In this context, the achievement of thermal comfort becomes a part of sustainability analysis. In this process, assessment of thermal comfort often requires an interdisciplinary approach and certain specialized knowledge, especially when it is observed as a part of an energy consumption problem.

When the rehabilitation and renovation process of existing buildings is concerned, especially when it refers to those buildings that are considered as built heritage, assessment of thermal comfort becomes both a goal and a segment of critical evaluation of this heritage.

Depending on the context in which thermal comfort is analyzed, students need to learn and gain knowledge on the subject in different ways: through lectures, case studies, exercises, in some cases learning process might include laboratory or even fieldwork. All these learning methods are in service of the achievement of thermal comfort through the appropriate design process.

# WHY?

## GOALS

Concerns of contemporary society refer on one side to occupants' health and well-being and on the other side, they address resource depletion problems, especially those related to energy consumption. In both cases, thermal comfort plays a vital role and represents a related subject.

The problem should be discussed from several different perspectives: of occupant, overall indoor environment, means and methods of creation of a built space needed to achieve the required thermal comfort, and implication of such efforts on the environment.

Each of those perspectives refers to different problems and topics that need to be taught.

- The occupant's perspective requires an understanding of relevant factors, personal or environmental that affect the perception of the thermal environment, i.e. thermal comfort.

- Understood as a constituent of an overall indoor environment, the problem of thermal comfort requires an understanding of its interrelation with other aspects of the indoor environment.

-Means and methods that provide a correlation between the built space and thermal comfort require knowledge of passive architectural measures and strategies.

- Implications on the environment related to the achievement of thermal comfort include methods and tools that provide information regarding the energy consumption and carbon emission of a building.

## TEACHERS' COMPETENCIES

Depending on the context in which thermal comfort is analyzed and taught, teachers' competencies may vary. In all cases, a teacher should be a knowledgeable and skilful expert, but his/her expertise might vary depending on the context.

Accordingly, in the case when thermal comfort is a design goal to be achieved, a teacher should be a skilful designer and practitioner having a good understanding of ways how to apply necessary passive architectural measures and strategies, including a selection of appropriate building materials and structures.

On the other hand, when the focus is on the implication on the environment that achievement of thermal comfort may affect, a teacher should be an expert with a good knowledge of methods and tools, including calculation and simulation methods of energy consumption and carbon emission of a building. In this case, there is often a need for a multidisciplinary approach, and a teacher might come from another professional background than architecture.

## COURSE TYPE

- ■ Design Studio (DS)
- □ Intensive Workshop (IW)
- ■ Theory Course (TC)
- □ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- □ Research Thesis (RT)
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- □ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
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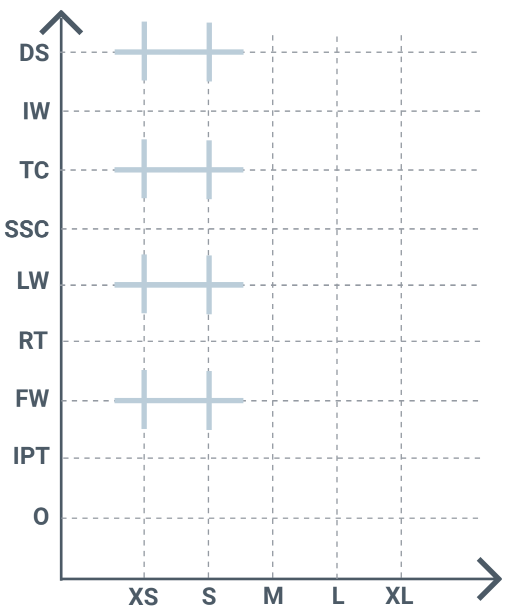
- □ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- □ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

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- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

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- □ theories of urban design and the planning of communities;
- □ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- □ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
- „2226” Lustenau building, Lustenau (Austria )

Authors:
- Baumschlager Eberle Architekten

Year (period) of the project
- 2013

This office and administration building express a low-tech alternative design response to the demand for energy-efficient buildings. Applied passive design solutions combined with a thoughtful choice of building materials provide a stable temperature range (22°C - 26°C) during the whole year.

The uniform thermal comfort is ensured using a massive wall structure, consisted of 38cm of load-bearing and 38cm of insulating brickwork, capable to store and radiate the heat emitted by the occupants and technical equipment (computers, lights). Summer overheating and excessive level of $CO_2$ is avoided by natural draughts, provided by the sensor-controlled ventilation panels in the windows.

Figure 1.„2226” Lustenau building
*Source: https://commons.wikimedia.org/wiki/File:B%C3%BCrogebäude_2226_Lustenau_%C3%96sterreich_2013_Baumschlager_Eberle_Architekten.jpg*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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University of Cyprus

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Aimilios Michael,
Chryso Heracleous

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**design approaches**

statements

# VISUAL COMFORT DESIGN

*пројектовање визуелног комфора • Visual Comfort Design • Σχεδιασμός για Οπτική Άνεση • Diseño del Confort Visual*

## GENERAL DEFINITION/ EXPLANATION

**Visual comfort design** takes as a target to achieve visual comfort in buildings. Visual comfort is a subjective condition of visual well-being induced by the luminous environment and usually defined through a set of criteria based on the level of light in a room, the balance of contrasts, the colour 'temperature' and the absence or presence of glare. Just as importantly, changes in light levels or sharp contrast can cause stress and fatigue, as the human eye is permanently adapting to light levels. It can vary depending on the following factors: time of exposition, type of light, the color of the eye (light-colored eyes tend to be more sensitive) as well as the age of the person (IESNA, 2000).

**Visual comfort design** can be applied in any kind of building. A correct natural lighting design can be a tool for sustainable refurbishment, guaranteeing cultural heritage conservation and preventive protection and recovery of the historical, architectural and philological value of old and/or listed buildings.

**Visual comfort design** can be a significant part of education as natural light represents time as the fourth dimenion as it renders shape, space and detail changing over time and should be incoroporated in undergraduare and postgraduate courses.

# WHAT?

## CONTENT

The positive impact of daylighting in the performance of buildings, the creation of a pleasant environment, the promotion of healthier conditions as well as the provision of energy saving has been well established over the years. Without appropriate lighting levels, people cannot fulfill their daily activities effectively, efficiently and comfortably. Lighting levels affect the occupant's physiology and psychology significantly. Lack of regular light exposure may cause a series of symptoms such as fatigue, stress, phase shifting and seasonal affective disorder known as SAD.

**Visual comfort design** is relevant to sustainability as achieving visual comfort using daylighting reduces the energy demands for artificial lighting and therefore improve the environment from $CO_2$ emissions. This reduction will also have an impact on the economic aspect. Heritage buildings usually incorporate the term of visual comfort in their design and usually is a result of their social activities in the building. Therefore, **visual comfort design** is very important in educational perceptive and the students should be able to understand the perspectives of **visual comfort design**, have a critical approach to the architectural design and training how the visual comfort can be improve in the case of conservation and reuse of historic/heritage buildings.

# HOW?

## METHODS

The general teaching philosophy could be subject discipline-based understanding the criteria of analysis of visual comfort in order to design comfortable spaces and understand possible improvements of visual comfort of heritage buildings. Teaching in such courses is often carried out through lectures as well as through the projects. It would be interesting to take one case-study and analyse the visual comfort and specialize in depth the knowledge of visual comfort criteria, identify whether the lighting levels are satisfactory for the required spaces and examine possible ways to improve visual comfort.

The leading methods should be critical evaluation of the cultural heritage bases on the visual comfort and sustainability analysis understanding how social, economic and environmental aspects affect the design of visual comfort.

The teaching should first focuses on the knowledge of visual comfort criteria, identify the methods that can be measured (on-site monitoring and software-based anaylsis) and practice it in the class in order to be understandable for students to implement them in their case-study building.

The possible and most appropriate learning environment is both knowledge-centred through lectures in order to get the knowledge of the criteria and assessment-centred in order to assess in practice the **visual comfort design** of the heritage building and provide possible improvements of the building for maximum visual comfort.

# WHY?

## GOALS

The course should aim to introduce research tools and methodological approaches to on-site recording and documentation as well as software simulation of building units and include methodologies for categorization, evaluation and processing of logging data.

The tutor should cover the key parameters that affect visual comfort and the evaluation criteria of visual comfort including lighting levels, daylight factor, dynamic daylight performance metrics ((i)Daylight Autonomy (DA), (ii) Useful Daylight Illuminances (UDI) (iii) Maximum Daylight Autonomy (DAmax), Discomfort Glare Probability) and methodologies for the evaluation.

Based on the above, the students can proceed with their project and the on-site monitoring of the case study building and the assessment could be taken for the three different seasons at 09:00, 12:00, and 15:00. After that, the students could proceed with the evaluation of the yearly assessment using software simulation (Radiance). The model should be validated based on the on-site monitoring recordings. Once the evaluation is undertaken, the students should be able to propose improvement strategies.

## TEACHERS' COMPETENCIES

- The teacher should be firstly a knowledgeable expert of the **visual comfort design** knowing the methodology of evaluation and the main design objectives for proper daylighting levels in order to avoid artificial lighting.

- The teacher should have the ability to critically understand the architectural design of heritage buildings and explain the sustainability incorporated in the building.

- The teacher should have research experience and be updated with the new methods regarding the evaluation of the visual comfort.

- She/He should be also a skillful expert in order to explain in an understandable manner and in practice the methods of the evaluation.

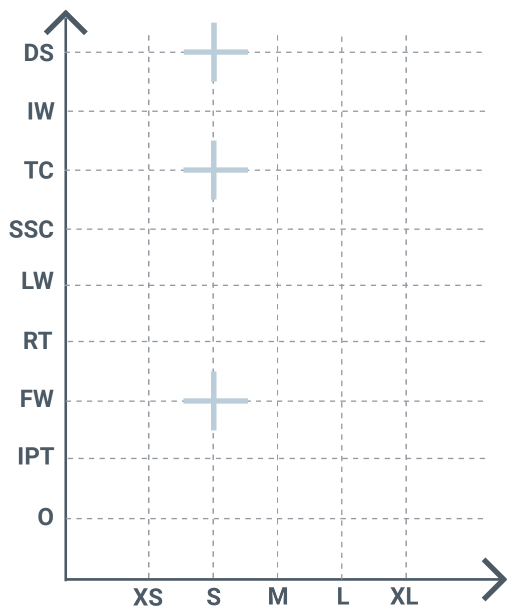
- Finally, the teacher should have the ability to provide technical solutions for the improvement of visual comfort in the case study building and help the students to implement them in the design phase.

## COURSE TYPE

- ■ Design Studio (DS)
- □ Intensive Workshop (IW)
- ■ Theory Course (TC)
- □ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- □ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- □ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- □ Urban Design Scale (M)
- □ Urban and Regional Planning Scale (L)
- □ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- □ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- [ ] the needs and aspirations of building users;
- [ ] the impact of buildings on the environment, and the precepts of sustainable design;
- [x] the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- [ ] the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- [x] the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- [ ] the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- [ ] the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- [ ] the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- [ ] the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- [ ] the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- [ ] strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- [ ] the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

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- [ ] strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- [ ] critically examine the financial factors implied in varying building types, constructional systems, and specification
- [ ] understand the cost control mechanisms which operate during the development of a project;
- [x] prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

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- [ ] the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- [ ] the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- Axiothea building,
Location: Nicosia, Cyprus

Authors:

- A. Michael, C. Heracleous, S. Thravalou and M. Philokyprou

Year (period) of the project

- 2013-2014

Axiothea is a building located in the urban traditional core of the Nicosia and has preserved its original architectural and urban character. The building is divided in different spaces including semi-open space- portico, double space room- dichoro and semi-open space-iliakos which have different lighting levels requirements based on the activity undertaken in these spaces. The visual comfort analysis has been made using on-site monitoring of the lighting levels of different spaces for the three representative season-periods as well as software simulation-based study analyzing the static and dynamic daylight performance metrics such as daylight factor, daylight autonomy and useful daylight illuminance. The results has shown that semi open spaces (iliakos) provided adequate lighting levels allowing their use as living spaces for everyday residential activities and social gathering, while dichoro showed limited lighting levels demonstrating the auxiliary use of these spaces.

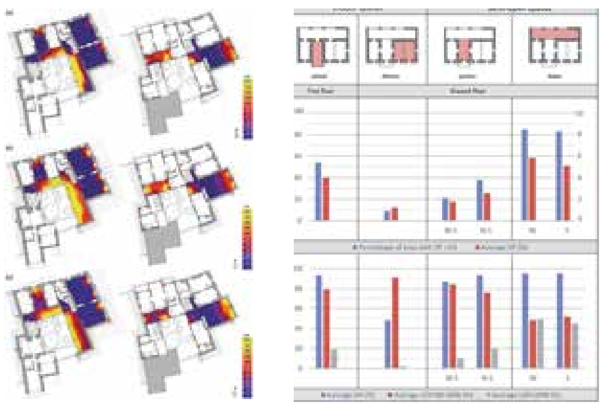

Figure 1. Left: In-situ measured lighting levels on the ground and first floor at 12:00 during (a) winter solstice, (b) spring equinox and (c) summer solstice. Right: Comprehensive diagram that indicates the key lighting performance research results of the spaces under study derived from static and dynamic simulation
*Credits: A. Michael, C. Heracleous, S. Thravalou and M. Philokyprou*

Figure 2. Building complex under study. (a) East fac¸ade showing sahnisi on the first floor, (b) semi-open spaces (iliaki) and courtyard and (c) north fac¸ade.
*Photos by: A. Michael, C. Heracleous, S. Thravalou and M. Philokyprou*

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**design approaches**

statements

# GREEN BLUE INFRASTRUCTURE (GBI)

*зелено плава инфраструктура • Green Blue Infrastructure • Μπλε Πράσινες Υποδομές • Infraestructuras Azul-Verde (IAV)*

## GENERAL DEFINITION/ EXPLANATION

EC Green Infrastructure Strategy (EC, 2013) defines Green Infrastructure (GI) as *"a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings*." Although the EC definition includes aquatic ecosystems, the expression "green and blue infrastructure" (GBI) has recently started to be used in order to highlight more explicitly the aquatic dimension of the concept, alongside the terrestrial one.

GI is a natural spatial structure that serves the interests of both people and nature. In contrast to usually mono-functional 'grey' infrastructures - GI is *multifunctiona*l. It aims to enhance nature's ability to deliver multiple *ecosystem goods and services* that contribute to sustainable development by providing variety of environmental, social, biodiversity as well as climate change and adaptation benefits. Elements of GI differ in relation to scale, and span from forests, regional parks, rivers and floodplains etc., at regional level, to street trees, hedges, ponds, green roofs and walls, etc. at local site scale.

GI planning and design is based on holistic understanding of the complex interrelations and dynamics of *socio-ecological systems*, and assumes *interdisciplinary* and *multi-scale* approach, thus creating a new challenges to academic education.

# WHAT?

## CONTENT

The purpose of integrating GBI into AUD education is to help development of future professionals capable to understand socio-ecological processes and benefits from ecosystem services, and to work in interdisciplinary environment in order to produce design solutions for benefit of both people and nature. Although GI can be planned and applied at both regional and local (city/town/village) level, the latter is focus of AUD education. Therefore, besides providing knowledge and awareness on general GI related concepts, processes and benefits, the focus of AUD teaching and learning activities should be on developing students' knowledge and skills to plan and design context-specific, integrated and sustainable solutions by integrating connected and multifunctional GBI elements into architecture/urban design projects in a knowledge-based, innovative and creative manner.

The students should be able to understand, design and assess integrated AUD interventions (at city/neighbourhood/site/building scales) in relation to key areas of benefits from GBI: a) *environmental quality* (air quality, temperature and water regulation; erosion and noise reduction…), b) support of biodiversity; c) provision of food, fibre; and d) quality urban living (recreational experiences, social interactions, aesthetic qualities…). Besides that, the understanding of how natural and cultural heritage contributes to sustainable delivery of GBI in specific context is important part of integrating this concept in AUD education.

# HOW?

## METHODS

Different general teaching philosophies may be applied for integrating GBI in AUD education. While for theoretical and seminar courses problem-based learning on GBI may be appropriate, studio based learning should be based on place and design based teaching philosophies.

Specific character of GBI as nature-based, multi-scale and multifunctional concept, makes it necessary for students to develop *system and critical thinking* skills as well to learn about and develop skills to conduct *sustainability analysis* within interdisciplinary teams.

*Student-centred* teaching and learning approach is the most appropriate for environmental education in general, and especially for learning and developing skills for GBI planning and design in AUD education. *Different learning environments are appropriate* for learning on GBI. While learning on GBI concept, related processes and possible design strategies can be performed in *class environment*, specific learning value will be provided through *place based* educational approach and different forms of *on-site learning*: field work and contact with local communities, etc..

# WHY?

## GOALS

The purpose of the learning/teaching process and activities in relation to GBI is to help AUD students:

- Get knowledge on *socio-natural processes* in built environment and on how can *eco-system services and nature-based solutions,* implemented through GBI, contribute to sustainable development and nature conservation and biodiversity, specifically in human settlements. *Interdisciplinary and system approach*, as well as widening the knowledge base to include variety of expert and lay knowledge, are important to help students understand how natural and cultural heritage may guide context-specific and appropriate design solutions.

- Learn how to approach *implementation of GBI* in AUD at *different scales* (City/metropolitan level, Neighbourhood level, Site/building level); Teaching on best practices and interdisciplinary and collaborative projects are of special importance;

- Develop *thinking, communication and design skills* that help integrate GBI in architecture and urban design in knowledge-based, socially aware and creative way. System, critical and creative thinking as well as learning through design are crucial for achieving this goal;

-Develop awareness of the nature in built environment and benefits it can provide to people, for which both class, collaborative and field work activities are important.

## TEACHERS' COMPETENCIES

In order to effectively educate AUD students on concept, purpose, elements and benefits that GBI may provide to people and nature, as well as how to integrate it into planning and design of human settlements, teachers should develop specific competences:

- They should be able to conceptualise and organise collaborative work with academics/students/professionals from different disciplines in order to help AUD students develop skills related to interdisciplinary work as well as for work with local communities.

- Besides that, depending on type of course, teachers should function as knowledge and skilful experts, but also as trainers/coaches that, in the context of student-centred design studio, enables students to develop authentic and creative approach to environmental issues and GI implementation in design.

- Finally, since knowledge about GI elements and application is constantly evolving, they are supposed to be lifelong learners and reflective agents, as well as innovators in transferring knowledge and skills to students.

This approach is in accordance with answers provided by experts in IO2 Questionnaire that stress the importance of interdisciplinary approach and application of innovative approaches to education.

## COURSE TYPE

- ■ Design Studio (DS)
- □ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- ■ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- □ Construction Detailing and Interior Design Scale (XS)
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- ■ Urban Design Scale (M)
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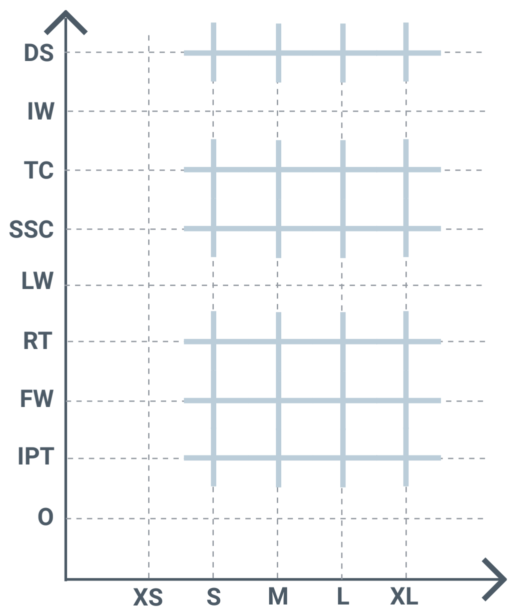


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- □ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

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- ☐ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

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- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
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- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- Green Streets Program",
Portland,Oregon, US

Authors:

- City of Portland, Environmental Services

Year (period) of the project

- 2005-

The city of Portland, US uses green streets, ecoroofs, trees, and other green infrastructure elements to manage stormwater, protect water quality and improve watershed health. It is famous and awarded for developing "Green Streets Program" that turns conventional streets into 'green streets' by installing storm-water street planters (small rain gardens, fig.2) in the sidewalks, curb extensions, roundabouts, and traffic islands. These planters intercept, slow, cleanse, and infiltrate runoff from streets. Green streets increase urban green space, improve air quality, replenish groundwater, and reduce air temperature. They also have educational role (fig. 1) and contribute to aesthetics and sociability of space. "Green Street Steward Program" was additionally introduced, aiming to encourage community members to volunteer in the care and maintenance of GI systems (fig.3). For more details, see:

https://www.portlandoregon.gov/bes/34598
https://www.portlandoregon.gov/sustainablestormwater
https://www.asla.org/awards/2006/06winners/341.html


Figure 1. Green Streets map
Source: Bernie Alonzo CC BY-NC-SA 2.0

Figure 2. Green street planter after a rain in Portland, Oregon,
Source: BES Portland CC BY-NC 2.0

Figure 3. Girl Scouts as Green streets stewards
Source: BES Portland CC BY-NC 2.0

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Giulia Rossi

16/18

**design approaches**

statements

# ACOUSTIC COMFORT DESIGN

*пројектовање акустичног комфора • Acoustic Comfort Design • Σχεδιασμός για Ακουστική Άνεση • Diseño del Confort Acústico*

## GENERAL DEFINITION/ EXPLANATION

Acoustic is a branch of physics concerned with sound (*ie* its formation, its propagation and its properties) and its mechanism of reception. As to the architectural field, it defines the parameters of speech and musical intelligibility, and relates them to constructions.
Acoustic comfort can be defined as the psychophysical condition for which an individual, immersed in a sound field, is in a state of well-being.
While designing for acoustic comfort, it is fundamental to factor in occupants' needs, activities to be performed, types of noise to be managed, construction systems and materials, so as to *scientifically* achieve noise limitation and optimal acoustic comfort. Although this has been an integral part of the design of structures for at least 2,000 years, a reproducible, if not fully scientific approach to the issue was only conceived at the beginning of the 20th century by *Wallace Sabine.* He pointed out that the most important quantity in determining the acoustic suitability of a room for a particular use is its *reverberation time*, and he provided a scientific model for its prediction and determination.

# WHAT?

## CONTENT

Acoustic comfort is a cornerstone for urban design, building insulation and interior design, but also has a role to play in the enhancement of existing cultural heritage, especially in fields such as the restoration of theatres or conference halls, *ie* spaces conceived to contain sounds. Interventions on such buildings should not alter their acoustic properties. Proper researching and studying in the field of acoustics should not be neglected in the setting of university and higher education: this could promote new models of heritage maintenance and renovation paying due attention to acoustic conservation and/or improvement, besides providing the young architect with the tools to design spaces with an adequate acoustic comfort.

# HOW?

## METHODS

The general teaching philosophy specific for **Acoustic Comfort Design** should include an interdisciplinary approach combining historical, architectural and scientific research concerning building and renovation materials. The learning styles should include ex-cathedra lectures, practical activities and seminars with invited lecturers. Practical workshops and field activities could be useful to provide the tools to process data on acoustic comfort and convey their value, in the field of both renovation and designing. Seminars with experts can provide significant case studies from around the world and inform about technological breakthroughs, both in designing and researching.

# WHY?

## GOALS

Teaching acoustics involves both theoretical knowledge and practical design skills. It can be regarded as a 4-point issue:

- Urban acoustics, *ie* spatial planning;
- Building insulation;
- Heritage maintenance and renovation;
- Interior design.

Each of these is crucial in the process of educating future architects due to growing market's expectations with regard to acoustics, as well new legal regulations being passed throughout Europe.
It is vital for a young architect to at least know and identify most common acoustic problems, regarding both architectural design and renovation. An inadeguate consideration of acoustic comfort can severely compromise the outcome of architectural designing and undermine the historical heritage.

## TEACHERS' COMPETENCIES

The knowledge transfer of **Acoustic comfort design** need an specific and at the same time interdisciplinary learning approach. The lessons to be effective in the transmission of theoretical, scientific and social aspects should consider:

- the clear presentation of learning outcomes and outcomes verification.
- the sharing of teaching material on the scientific theoretical framework and the simulation and experimentation of the practice knowledge in site.
- the stimulation and motivation interest in the issues introduced.

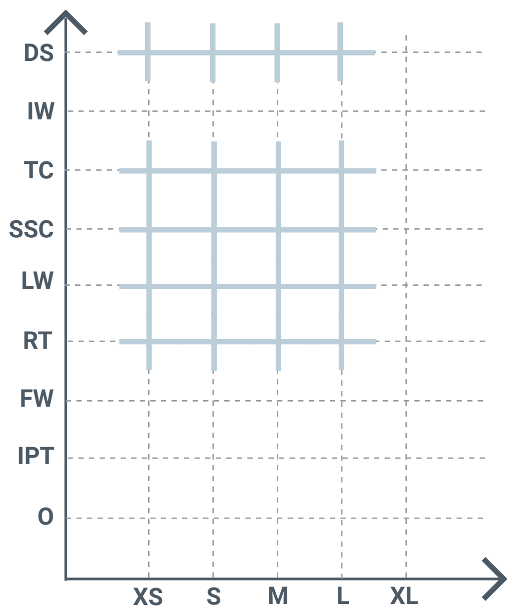
To achieve a high level in learning outcomes and students comprehension of the topics, it can be helpful that the teacher is available for clarifications and explanations.

## COURSE TYPE

- ■ Design Studio (DS)
- ☐ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ■ Research Thesis (RT)
- ☐ Field work (FW)
- ☐ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ☐ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ■ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

5 **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- the needs and aspirations of building users;
- the impact of buildings on the environment, and the precepts of sustainable design;
- the way in which buildings fit into their local context.

6 **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- the potential impact of building projects on existing and proposed communities.

7 **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

8 **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

9 **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- principles associated with designing optimum visual, thermal and acoustic environments;
- systems for environmental comfort realised within relevant precepts of sustainable design;
- strategies for building services, and ability to integrate these in a design project.

10 **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- critically examine the financial factors implied in varying building types, constructional systems, and specification
- understand the cost control mechanisms which operate during the development of a project;
- prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

11 **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- The Proscenium of Opera Houses as a Disappeared Intangible Heritage: A Virtual Reconstruction of the 1840s Original Design of the Alighieri Theatre in Ravenna

Authors:

- D'Orazio, D.; Rovigatti, A.; Garai, M.

Year (period) of the project

- 2019

During last three decades, the interest of scholars has been focused on establishing the acoustics of HOHs (Historical opera Houses) as *intangible cultural heritage*. Yet, HOHs need restorations which often alter their acoustics, hence their fundamental characteristics as a theatre. An example of the importance of acoustics as an integral part of historical buildings comes from a research carried out on *Teatro Dante Alighieri*, in Ravenna, where the proscenium was removed in 1928 so to construct an orchestra pit, not included in the original design dating back to 1840. Both the original and the existing theatre have been rendered into study models through acoustic and vibro-acoustic measurements and a scientifically rigorous comparison has been performed, in accordance to actual ISO3382 criteria. This has proved that the original wooden proscenium contributed greatly to the acoustics of the theatre that was therefore sensibly modified by the refurbishment.

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Celia López Bravo

# 17/18

## design approaches

statements

# MULTISCALE DESIGN APPROACH

*пројектовање кроз више размера • Progettazione interscalare • Πολυεπίπεδη σχεδιαστική προσέγγιση • Diseño Multiescalar*

## GENERAL DEFINITION/ EXPLANATION

The **multiscale design approach** in architecture and heritage shapes complex projects such as regional planning ones, in which city, infrastructure, building and public space are, at different scales, goals and economic and social resources. Besides, the historical characterization of the territory plays a role of the utmost importance within this design strategy, because each of its historic layers have determined patterns that must be part of the new urban decisions.

As a practical teaching model, it is based on open project statements that integrate different work scales. This approach, usually used as a model of analysis in social sciences, begins to be used in architecture and heritage teaching as a teaching method for design projects during the last decade.

In this specific field, projects and multiscale learning manage to work together on territorial problems, urban or rural, which reach the architectural detail.

# WHAT?

## CONTENT

The methodology of approach to the multiscale project is based on the practical work of the students in heritage issues of a territorial nature that, in a guided way, give rise to an architectural and landscape project solution.

This methodology implies the determination by the student of a specific area and an object of work from the proposed statement, of initial, final and intermediate scales and an appropriate graphic system for them. In this way the student makes his own decisions that will differentiate his project from the beginning, becoming aware of the complexity of the heritage work. Thus, multiple results and supports of class work will coexist, which function as training for future situations of the career.

Therefore, this approach results appropriate during the last years of degree, once the student has already experienced others design courses using delimitated scales, has acquired the skills and theoretical base and, consequently, the maturity, necessary to face open statements and work autonomously using different scales.

# HOW?

## METHODS

The project must be divided in several phases of study and proposal. There are usually three. In the first phase, a contact with the reality is carried out. To do this, field visits can be made depending on the possibilities, as well as a comprehensive recognition through cartography, photography and bibliographic documentation of the territorial and landscape context that is proposed. This data must be graphically materialized. In the second phase each group set its project object. To do this, they must take into account the analysis carried out in phase 1, as well as position themselves in terms of the degree of intervention they are going to formulate and the criteria on which they are going to be based. In the third phase, the implementation of the idea and its program of uses is carried out graphically, defining the structural and constructive scheme used.

During the development of these phases, the teaching team invites students to reflect on the obsolescence of constructions, structures and landscapes. For this purpose, problem-based learning methodologies are used, in which groups of students discover, through trial-and-error work and critical thinking, what solutions they must provide (Flipped learning).

# WHY?

## GOALS

The main objective of the use of this approach is that the student gathers the maturity and the necessary skills to answer to diverse and complex territorial problems, including associated material and intangible heritage and using geographical, urban, administrative, heritage and environmental tools.

To do this, the class must function as a workshop in which you work as a team, stand up, discuss, etc. in which the students are the centre and the teacher is an agent who sets the rhythms, ensures an appropriate environment for learning and raises new questions when necessary.

One of its specific objectives is the students to obtain new interdisciplinary skills. Employing and experimenting with documents, terminology and agents from other knowledge areas is one of the skill and conceptual contents that distinguishes this teaching approach. In fact, an interdisciplinary teaching team could also be recommended in workshops where this idea would be experimented.

## TEACHERS' COMPETENCIES

The teacher must have the following general and specific competences, to ensure the appropriate teaching of the subjects that use this methodology:

- Have the capacity to gather and interpret relevant data in the field of architecture, to make judgments that include a reflection on relevant issues of a social, scientific or ethical nature.
- Ability to analyse, synthesize, organize planning and manage information and bibliographic resources, solving problems and enhancing teamwork.
- Adequate knowledge and applied to architecture and urbanism of graphic survey techniques (topographic, cartographic) in all its phases, from the drawing of notes to scientific restitution.
- Capacity for the conception, practice and development of sketches and drafts, for the elaboration of functional programs of buildings and urban spaces.
- Ability to intervene in and conserve, restore and rehabilitate the built heritage, employing capacities related to architectural criticism.
- Adequate knowledge of the relationship between cultural patterns and the architect's social responsibilities.
- Capacity for analysis and formal ideation as bases of the project action.
- Aptitude to carry out preliminary studies to intervene in built heritage.
- Ability to develop intervention proposals for the transformation of the environment; architecture and urbanism.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
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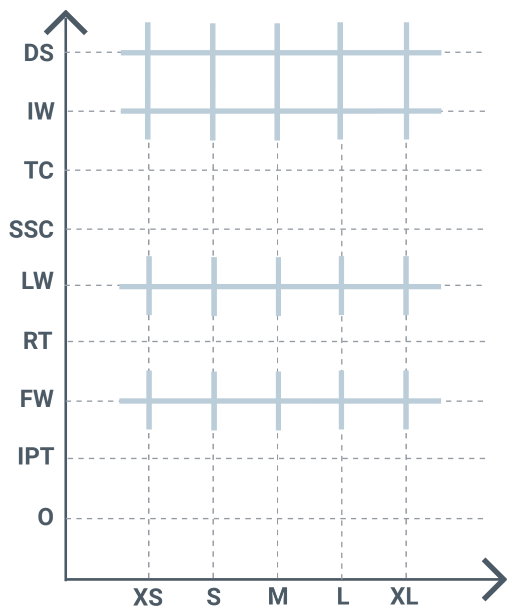


## LEARNING OUTCOMES

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- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
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- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

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- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

✕ Work and landscape intervention in the Archaeological Complex of Baelo Claudia, in Cádiz

Authors:

✕ Andalusian Historical Heritage Institute (IAPH)

Year (period) of the project

✕ 2008

The work, started in 2008, has a first historical-landscape approach to the city of Baelo Claudia, a sub-project of intervention and a final action based on the proposal of itineraries, which improve the heritage reading (cultural and environmental) and the accessibility of the environment of the Inlet of Bologna. To do this, a basis of the action is first established, the project mechanisms are developed and finally the actions are planned and executed, in this case a series of built elements that delimit, close and generate a promenade through the archaeological complex.

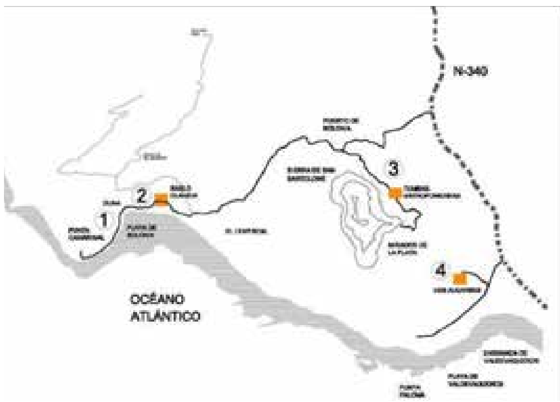


Figure 1. Scheme of geographical identification of the areas intervened
*Source: Projects Department, IAPH*

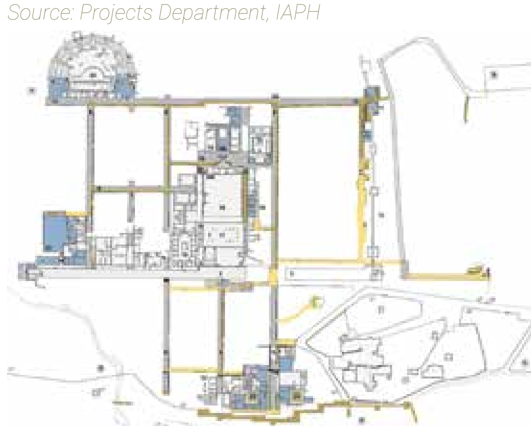

Figure 2. Intervention on the Archaeological Site of Baelo Claudia. General Planimetry
*Source: Projects Department, IAPH*

Figure 3. Structure of the walkway over the dune of the coastal edge. Leisure areas and geometry translation of the shape of the cardo
*Source: IAPH*

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# ACTIONS

Preventive Conservation

Integral Heritage Protection

Conservation

Restoration

Redevelopment

Adaptive Reuse

Consolidation

Temporary planning and Meanwhile spaces

Refurbishment/Rehabilitation

Heritage Management

Nature Based Solutions

Public Advocacy for Social Participation

Circular Economy

Developing Cultural Routes and Itineraries

Microclimate Improvement

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01/15

**actions**

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# PREVENTIVE CONSERVATION

*превентивна конзервација • Conservazione preventiva • Προληπτική προστασία και συντήρηση • Conservación Preventiva*

## GENERAL DEFINITION/ EXPLANATION

Based on the principle that prevention is better than cure, **Preventive Conservation** refers to a systematic and integrated approach to care, based on strategies developed for the maintenance and up-keep of heritage. **Preventive Conservation** is central to any consideration on the use of and access to cultural heritage, and also supports the long term success and appreciation of interventive procedures carried out during remedial conservation and restoration. Unlike Remedial Conservation and Restoration, which intervene directly on the material fabric of heritage, **Preventive Conservation** arises where site-specific evaluation of the factors (physical, chemical, biological, environmental and human) that are contributing to the deterioration of the heritage recommend a management regime built around suitable methods of storage, handling and use. These recommendations also encompass loan, travel and environmental control including pollutants such as dirt and dust. The diagnostics and risk-assessment behind **Preventive Conservation**, and the design of suitable and specific management regimes, are the work of the Conservator-Restorer. Whereas specialised education is required to directly intervene on the cultural heritage to safeguard it, devising long-term management plans is an iterative and multidisciplinary process, involving many different actors and stakeholders. **Preventive Conservation** offers a sustainable framework for caring for cultural heritage, a platform for public participation in the care of the heritage and as a driver of local development.

# WHAT?

## CONTENT

**Preventive Conservation** as a notion can be included in courses related to the restoration of historic buildings and ensembles and of course historic and archaeological sites. It is one of the basic concepts that should be taught at a theoretical level but also in laboratory coursework. It can also be included as one of the objectives in intensive workshops focusing on protection, maintenance, rehabilitation and sustainability.

There is a certain tradition in dealing with **preventive conservation** in various heritage fields. Looking at analogies and differences a better definition can be drawn that applies to the field of built heritage. In archaeology, the term "**preventive conservation**" can be applied to express activities that aim at safeguarding and documenting sites urgently, when major (infrastructural) works are planned on them which will eventually make the site inaccessible. In this sense it is linked to rescue archaeology.

The preventive nature of these actions relates to the risk for the possible loss of data or the risk for leaving archaeological findings "forever" inaccessible or undocumented. In museums where movable heritage is conserved, there is a vast experience with **preventive conservation**. It deals with the conservation of objects for which an optimum (micro) climate can be created to assure optimum preservation conditions.

# HOW?

## METHODS

**Preventive Conservation** is the mitigation of deterioration and damage to cultural heritage (tangible and intangible) through the formulation and implementation of policies and procedures for the following: appropriate environmental conditions; preparedness and response; and reformatting/duplication. **Preventive conservation** is an ongoing process that continues throughout the life of cultural heritage, and does not end with interventive treatment.

The general teaching philosophy has to focus on why and how we can achieve to:

- To extend the life of cultural heritage.
- To reduce the risk of catastrophic loss of cultural heritage.
- To defer, reduce, or eliminate the need for interventive treatment.
- To extend the effectiveness of interventive treatment.
- To provide a cost-effective method for the preservation.
- To encourage the conservation professional to employ the broadest range of preservation strategies (e.g., risk management, long-range planning,site protection).
- To encourage the conservation professional to collaborate with others who have responsibility for the care of cultural heritage.
- To encourage the participation of the people in the preservation of cultural heritage.

# WHY?

## GOALS

The learning/teaching process through theoretical and laboratory aims to:

• discuss and practice the risk management approach. Risk management can be understood not only as the management of rare catastrophes, but also as the management of slow continual hazards, and everything between.
• review the risk management concept and its various current interpretations and applications in the field of cultural heritage. Participants will be introduced to a practical method to carry out a risk assessment survey.

By the end of the course participants should be able to :
- identify all agents of deterioration;
- identify risk types;
- estimate scale and types of risk;
- rank their relative importance;
- Evaluate the relative costs, benefits and collateral risks of implementing the proposed mitigation measures.
- To understand International and national context, strategies and policies adopted in the direction of **Preventive Conservation**

By the end of the course, participants will be able to put into application the proper **preventive conservation** measures.

## TEACHERS' COMPETENCIES

Teaching of integrated conservation should be done by an interdisciplinary team of teachers who should be specialized in issues of conservation restoration and environmental sciences Therefore there must be a course coordinator, becoming a moderator of experts' or invited speakers.

The course tutors will comprise specialised architects, civil engineers, chemical engineers, archaeologists, conservators, collection managers, museum curators and museum technicians, educators and professionals who teach management and **preventive conservation**, in either an academic or a vocational environment. Teaching in the field should definitely be done with the involvement of stakeholders and representatives of local government, who will have a key role in decision making.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- ■ Internship Practical training (IPT)
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## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
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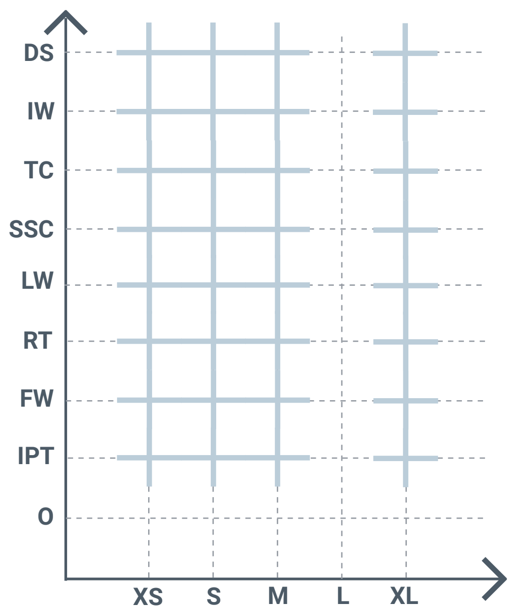


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- □ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ■ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ■ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ■ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

//////////////////////////////////////////

Dissertation title:

- Numerical study of the heat and moisture transfer in subterranean historic structures and regulation of the conditions for protection and sustainable management

Authors:

- Kyriakou, Vasiliki of Thomas

Year of the dissertation

- 2020

Examples of preventive conservation are appropriate measures and actions for registration, storage, handling, packing and transportation, security, environmental management (light, humidity, pollution and pest control), emergency planning, education of staff, public awareness and legal compliance. The relevant example chosen to be presented is the doctoral dissertation: Kyriakou V. (2020), Numerical study of the heat and moisture transfer in subterranean historic structures and regulation of the conditions for protection and sustainable management, This research analyses and proposes the appropriate measures for the preventive protection of the very important ancient monuments, the Macedonian tombs, which are constructions below the surface of the contact.

Figure 1. Tomb D façade and Tumulus D Pella
*Copyright: V Kyriakou.*

This is a research on the case study of Macedonian tombs in north Greece which are monuments of great historic importance and value. Systematic monitoring and evaluation of the indoor climatic conditions has shown that their deterioration processes are mainly caused due to changes of temperature and relative humidity when the monuments are exposed to the environment and the presence of visitors. Protection against future deterioration can only be assured through proper regulation of their indoor microclimatic conditions. This doctoral research focuses on the issue of the protection of Macedonian tombs using the concept of preventive conservation to apply indirect measures and actions for environmental management to avoid and minimize future deterioration and loss. It provides an evaluation and decision making methodology that is based on computer simulation. That way, decision making for strategic management of the tombs and control of the microclimate will be based on the assessment of different strategies using simulation processes. Applying preventive measures will strengthen the resilience of the referred heritage sites.

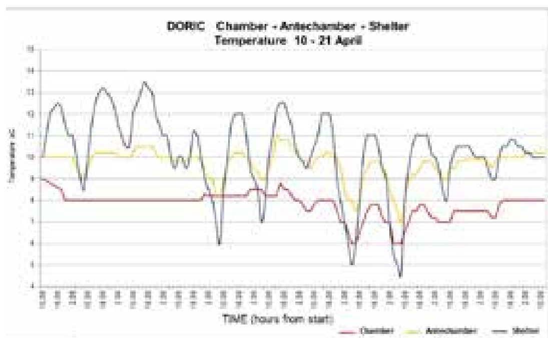


Figure 2. April diagram Temperature
*Copyright: V Kyriakou.*

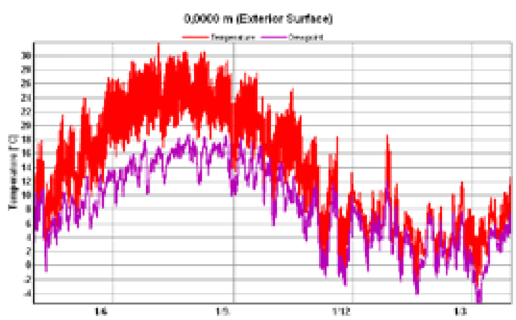


Figure 3. Tomb DORIKOS_Dew point_Ext 0
*Copyright: V Kyriakou.*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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# INTEGRAL HERITAGE PROTECTION

*интегративна заштита наслеђа • Conservazione dei Beni Culturali • Ολιστική Προστασία της Πολιτιστικής Κληρονομιάς • Protección Integral del Patrimonio*

## GENERAL DEFINITION/ EXPLANATION

Heritage conservation has changed from being a limited activity focused on single monuments to protecting wider contexts. Since the idea of **Integrated Conservation** was promoted in the Amsterdam Declaration on the European Architectural Heritage (1975) and the integrated approach was emphasised in the Granada Convention (1985), the Valletta Convention (1992) and the Florence Convention (2000), various other international documents/instruments have been produced with reference to the principles and development of guidelines for planning and heritage management concerning urban heritage values.

**Integrated conservation** (IC) is part of the general process of planning and management of cites and territories in a multi-referential perspective (economic, political, social, cultural, environmental and spatial). It centres on (but does not limit itself to) the physical and spatial aspects of consolidated areas that are socially recognised as of cultural value and seeks to maintain the integrity, authenticity and continuity of cultural value for present and future generations. It emphasises the conservation of the physical and spatial aspects within the development/ transformation process of the city, while seeking sustainable development by transforming the cultural values of the city into assets that add value to all dimensions of the development process.

# WHAT?

## CONTENT

The main objectives of the **Integrated Conservation** approach and action include:
• Promoting an interdisciplinary approach in physical and normative initiatives in planning of heritage conservation in sites, towns, historical centres, villages or suburbanised areas;
• Promoting the use of models for institutional, operational and public participation that can facilitate communication among experts of different disciplines related to the heritage;
• Creating understanding of some research-based principles for interdisciplinary communication by means of practical tools

Considering the complexity of the activities for appropriate heritage conservation, and recognising its value and potential for sustainable development of society, there is a need for all built environment professionals and officials to be aware of the relevant issues such as conservation, urban planning, land use, etc. They have to build co-ordination in the development of instruments to avoid subsequent conflicts and legal actions and to develop sectoral policies that contribute to the same objectives according to the principles of economic development, social balance and protection of the environment including the heritage.

# HOW?

## METHODS

**Integrated conservation** means a set of measures aimed at ensuring the continued existence and enrichment of heritage, as well as its maintenance, restoration, regeneration, use and revitalisation. Protected area means the extent of the protected monument (immovable cultural asset) and its surrounding (protective zone(s)).

In this context theoretical lectures and exemplary studies should be presented in conjunction with educational excursions. Research means those works undertaken with respect to the heritage regarding the requirements for its protection, more specifically aimed at examining its parts and obtaining data on its significance, physical condition and the existence of any threat(s) to its preservation.

Preliminary research means research on the heritage and environment which is to be carried out in order to:
1. Provide information necessary for evaluation of the heritage prior to development in a particular area or
2. Specify protection measures.

Evaluative survey of the heritage in its spatial context means updating the heritage register with information on the actual physical condition of the heritage and its evaluation in a given area, made available to the planning authorities by a recommended expert survey.

In conclusion, in the context of the educational process, studio courses as well as intensive workshops should be done, training workshops should be done for the study of urban units or villages of historical interest, in which the students should analyse and formulate proposals for their integrated protection. Representatives of the management bodies as well as the local government should be involved in this process.

# WHY?

## GOALS

The studio course must handle many levels and scales of analysis and design. Urban planning, urban design, environmental design, restoration of historic buildings and complexes and integration of new architecture into historical complexes and sites The goal of the studio course combined with theoretical courses is to familiarize students with: The recent theory and with today's concerns associated with the integration of historic sites and ensembles into the contemporary context, and with a critical approach to the cultural tradition. It seeks to give them skills for programming and design new interventions for a sensitive sector of increased demands and complexity while familiarizing them with the multidimensional and multidisciplinary approach to the historical architectural and natural reserve. The studio topics must include complexes and sites of historic interest, such as: Historic city centers, degraded urban areas of historical interest, traditional settlements, abandoned historic villages in the countryside, abandoned historical industrial complexes and sites, etc.

The implementation of studio courses and workshops requires the movement of the students in the selected historic settlements or sites and field work as part of the educational process.

## TEACHERS' COMPETENCIES

Teaching of **integrated conservation** should be done by an interdisciplinary team of tutors who should be specialized in issues of conservation and restoration, regeneration, use and revitalisation of historic sites. Therefore there must be a course coordinator, becoming a moderator of experts' or invited speakers. Teaching in the field should definitely be done with the involvement of professional experts, stakeholders and representatives of local government, who will have a key role in decision making.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
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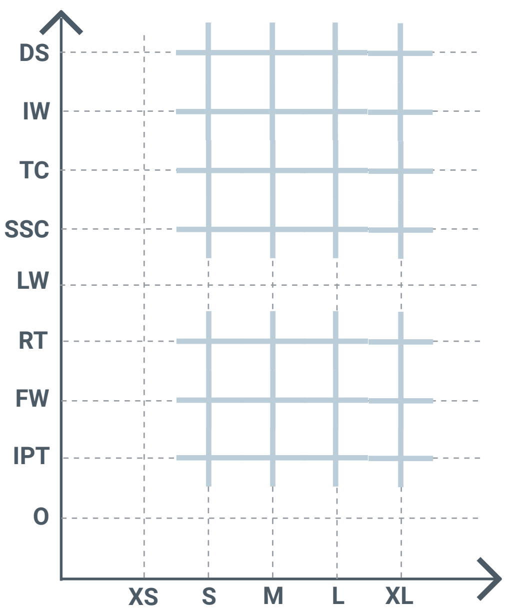


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
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- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

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- □ strategies for building services, and ability to integrate these in a design project.

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- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title:

- Integral heritage protection plan for traditional mountain settlement of Pandeleimon

Authors:

- Maria Dousi

Year of the project:

- 2005

As a characteristic example a integrated conservation project, the case of the traditional mountain settlement of Pandeleimon on the flanks of Mount Olympus is presented.

After World War II there was a strong migratory movement tendency from mountain settlements to the nearest urban centres with the consequent depopulation of these settlements. The increase in the standard of living in Greece over recent decades and the improvements in infrastructure, together with the sensitisation of certain groups of people to the qualities and values of the vernacular architectural heritage, have resulted in the re-evaluation of traditional architecture. Thus a tendency for the re-habilitation of abandoned traditional mountain settlements, as second homes or places for leisure use or cultural purposes, has started. This resettlement, in some cases without any programme and in others

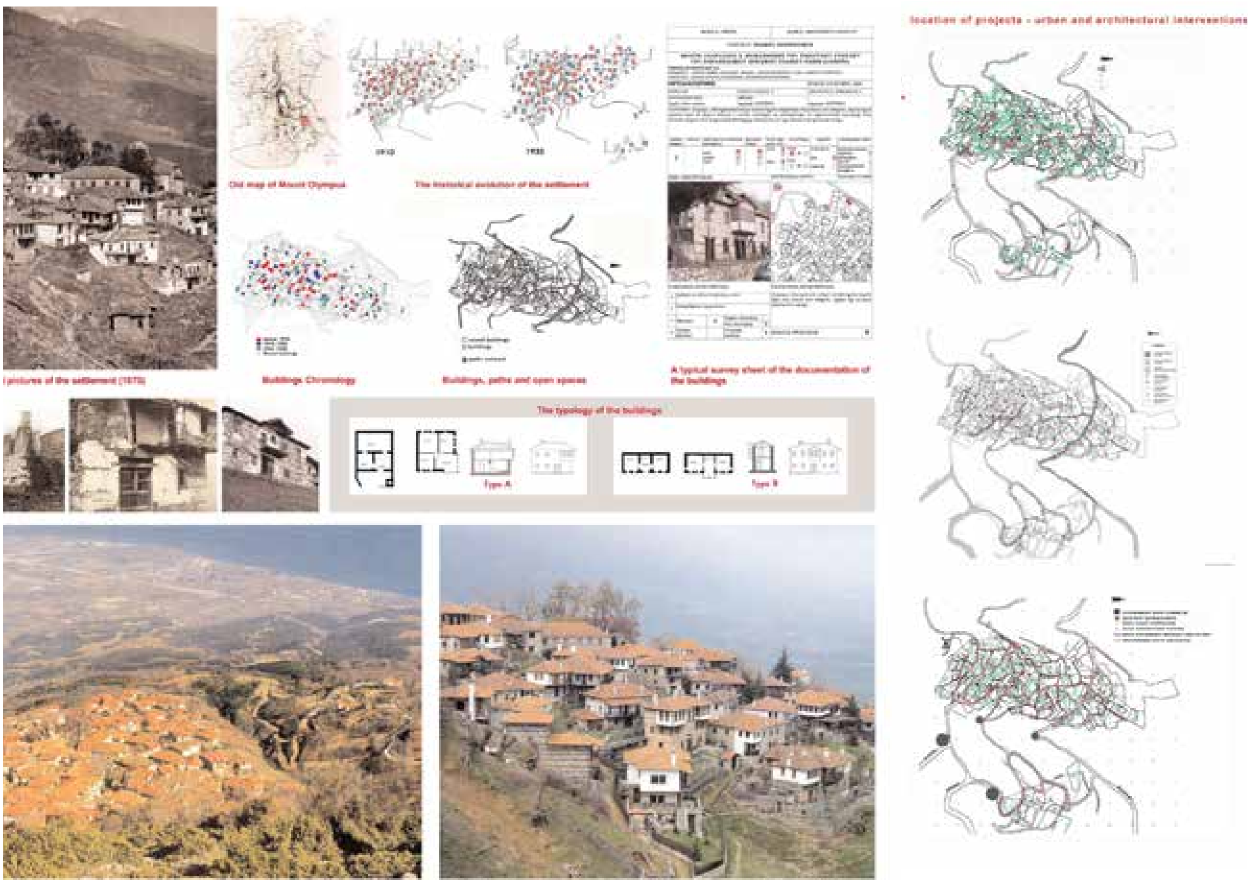

Figure 1. Data of the settlements. integral protection plan.

planned and monitored through schemes of special subsidies and grants, has created certain problems for local communities and authorities, as well as for the historical environment. The increase in land values, the different mentality and way of life of the new settlers, the new tendencies for using buildings in different ways, the increase in traffic, economic and social problems which arise, and the very important issue concerning the restoration of historic buildings and the protection of the traditional character of the settlements are the main problems to deal with.


Figure 2. Data from the analysis and documentation of the settlement.
*Copyright: Maria Dousi.*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH


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University of Cyprus

UCY

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Maria Philokyprou

03/15

**actions**

statements

# CONSERVATION

*конзервација • Conservazione • Συντήρηση • Conservación*

## GENERAL DEFINITION/ EXPLANATION

Architectural **conservation** describes the process within which material, historical, design durability of mankind's built architectural heritage is prolonged to last longer and to be able to sustain difficult conditions or to be kept sustainable in general. **Conservation** in a narrow sense, as opposed to restoration, means the upkeep activity i.e. actions for the maintenance, preservation, protection of a heritage structure to its current situation with minimal interventions, but **conservation** in a broad sense means the sum of activities included in the previous description plus restoration and other possibly related activities. According to the Burra Charter (1999) **conservation** entails all the processes of looking after a heritage place so as to retain its cultural significance. **Conservation** is an integral part of good management of places of cultural significance. **Conservation** is based on a respect for the existing fabric, use, associations and meanings. It requires a cautious approach of changing as much as necessary but as little as possible. **Conservation** should make use of all the knowledge, skills and disciplines which can contribute to the study and care of a heritage place. Traditional techniques and materials are preferred for the **conservation** of significant fabric. According to Cesare Brandi "Conservation's primary objective is the protection of cultural resources from damage and depletion, or using Brandi's own words, "an activity dealing with extending the life of a heritage work respecting its aesthetic appearance and historic value…any operation that aims to put back into effective order a product of human activity".

# WHAT?
## CONTENT

The term (conservation) is frequently found in education, as a variety of courses in university programs deal with **conservation** of heritage buildings or urban centres. Today, a great part of the building activity takes place in existing environments while architects are often called upon to provide solutions in order to conserve and reuse existing heritage dwellings and historic centres.

Teaching **conservation** of heritage buildings is very important in an educational perspective as it responds to the socio-economic and cultural character of societies. It is a sustainable procedure towards the built environment. The **conservation** and reuse of heritage dwellings has a very positive impact on the development of local economies, as it generates local labour demands, and, at the same time, safeguards the cultural identity. The **conservation** of architectural heritage covers the three aspects of sustainability; i.e. environmental, economic and social, a fact that renders it an extremely sustainable method of development.

Through the learning process students can acquire theoretical and practical knowledge in order to fulfil the current local needs for **conservation** in the private and public sector, taking into consideration the maintenance of the passive strategies incorporated in the design of heritage buildings.

Courses related to **conservation** aim to develop critical methods of analysis of important architectural works of the past and to provide knowledge and methodological tools for their conservation.

One of the goals of such courses is the acquisition of knowledge according to an environmental and sustainable approach towards conservation, through the study of the most recent international charters on conservation, the recent strategies followed as well as through representative case studies.

# HOW?
## METHODS

A course related to **conservation** often includes a critical overview of contemporary trends and theories on the **conservation** and reuse of heritage buildings, providing the general principles and a methodology for their overall protection. In the framework of such courses, a critical analysis of international charters and declarations on **conservation**, including the main theories of **conservation**, are discussed and important examples of historic **conservation** projects are analysed. In the framework of such courses, lectures, theoretical discussions, critical analysis of selected essays and site visits, as well as implementation and presentation of projects prepared by students, are carried out.

Projects include critical analysis of selected buildings after collecting information on their development throughout history (acknowledging the various phases, successive layers and interventions they have undergone), in the socio-political framework of each period, followed by a critical analysis on the methods of rehabilitation. Finally, suggestions and solutions are proposed on how to manage the problems encountered during their analysis.

# WHY?

## GOALS

The main teaching intentions of courses related to the **conservation** of architectural heritage are the following:
- Acquisition of knowledge and development of critical thinking on theories of **conservation** (throughout time) and on contemporary trends that have been recently formed.
-Training in both theory and practice on subjects of **conservation** and reuse of historic buildings and complexes as well as buildings of the modern movement.
- Understanding of the principles of the overall protection of buildings and complexes
- Understanding the important role that the **conservation** of existing buildings plays towards a more sustainable attitude for the built environment
- Acquisition of knowledge to recognze the passive environmental strategies incorporated in the design of historic and vernacular structures in order to conserve and reinforce them during the **conservation** process.

## TEACHERS' COMPETENCIES

A teacher in order to effectively transfer knowledge about vernacular heritage and **conservation** should:
- combine practical and theoretical knowledge and experience on the field of conservation.
- know the use of materials and equipment in the conservation practice
- effectively communicate with other professionals related to conservation
- be able to cooperate with governmental bodies
- be engaged in the study of conservation of architectural heritage and be able to transfer her/his enthusiasm to students
- be familiar with conservation principles and the international framework for the protection of vernacular heritage, the international charters and declarations on conservation

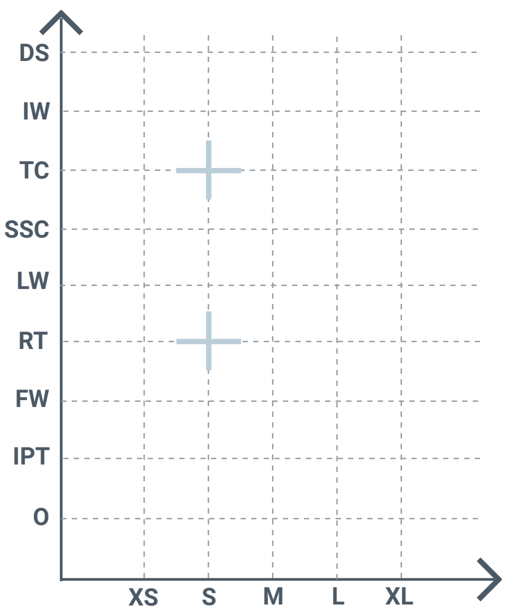
The combination of practical with theoretical knowledge in order to transfer knowledge effectively to the students was underlined in the IO2 Questionnaires.

## COURSE TYPE

- [ ] Design Studio (DS)
- [ ] Intensive Workshop (IW)
- [x] Theory Course (TC)
- [ ] Seminar (short comprehensive) (SSC)
- [ ] Laboratory work (LW)
- [x] Research Thesis (RT)
- [ ] Field work (FW)
- [ ] Internship Practical training (IPT)
- [ ] Other (O)

## SCALE

- [ ] Construction Detailing and Interior Design Scale (XS)
- [x] Architecture: Buildings Scale (S)
- [ ] Urban Design Scale (M)
- [ ] Urban and Regional Planning Scale (L)
- [ ] Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [ ] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [x] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [ ] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [ ] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [x] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [ ] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- [ ] how the theories, practices and technologies of the arts influence architectural design;
- [x] the creative application of the fine arts and their relevance and impact on architecture;
- [ ] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- [ ] theories of urban design and the planning of communities;
- [x] the influence of the design and development of cities, past and present on the contemporary built environment;
- [ ] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title:

- Urban landscape rehabilitation in Lefkara

Authors:

- Department of Antiquities: Lena Pissaridou, architect.
  Department of Town Planning and Housing: Irene Hadjisavva, architecturbanist.
  Vassilis Ierides Associates: Vassilis Ierides, architect and David Castrillo, architect

Year of the project:

- 2005-2007

Conservation of Lefkara vernacular heritage on both sides of a traditional street comprising 27 buildings of various uses, mainly residential. The buildings, located in this area, are mainly vernacular dwellings and are mostly two-storied, with stone masonry and inclined tiled roofs. The buildings follow a continuous attached building system common in traditional settlements. Through a conservation proposal, a holistic approach was followed for the site and its various elements. The project included the conservation of 19 facades of vernacular dwellings, the infrastructure for future implementation of the underground electrical network infrastructure, the improvement of the present external electrical network, the repair and reconstruction of a small area of pavements and the placement of some urban furniture and signs (IO1_LEFKARA_VERNACULAR SETTLEMENT).

Figure 1. Elevation after restoration and  Figure 2. The facades of vernacular dwellings of the street after conservation works
*https://www.rehabimed.net/2015/11/urban-landscaperehabilitation-in-lefkara-cyprus-the-recuperation-of-amodern-past/*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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[3] Philippot P., "Reading 26. Historic Preservation: Philosophy, Criteria, Guidelines, I", in Historical and Philosophical Issues in the Conservation of Cultural Heritage edited by Nicholas Stanley Price, M. Kirby Talley Jr. And Alessandra Melucco Vaccaro, (The Getty Conservation Institute, Los Angeles), USA Science Press, Division of the Mark Printing Group (1996) 268-274.

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[11] Philokyprou, M. and Michael, A. (2020). "Environmental Sustainability in Conservation of Vernacular Architecture. The case of rural and urban traditional settlements in the Mediterranean area", International J*ournal of Architectural Heritage: Conservation, Analysis and Restoration* (Taylor and Francis) https://doi.org/10.1080/15583058.2020.1719235.

[12] Charters and Declarations on Conservation (Venice Charter, Burra Charter, Declaration of Amsterdam, Nara Charter, etc)

University of Cyprus

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Theodora Hadjipetrou

04/15

**actions**

statements

# RESTORATION

////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

*рестаурација • Restauro • Αποκατάσταση • Restauración*

## GENERAL DEFINITION/ EXPLANATION

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The term **restoration** refers to the actions taken with the aim of preserving and maintaining a cultural asset and restoring it to its original or older form (former state) in order to reveal its values, always with respect and preservation of its authenticity. **Restoration** should always be based on evidence found locally or through bibliographic sources, so a detailed holistic study must precede it. In the case of monuments, **restoration** should be carried out only in exceptional cases and should always be followed by an archaeological study of the site. The 1801 edition of the Shorter Oxford Dictionary defines **restoration** as: "the action or process of restoring something to an unimpaired of perfect condition. The problem with this definition is that it rules out most actions that are commonly understood to be **restoration**s, since very few of them actually manage to, or actually intend to leave the object in perfect condition. For these reasons in the 1824 edition of the Shorter Oxford Dictionary "**restoration**" was defined as the process of carrying out alterations or repairs with the idea of restoring a building to something like its original form (not necessarily to its original state). In fact, the objective of many **restoration**s is only the attempt to return the object to a better, less damaged state, a preceding state which may not be the state the object was in when it was originated (Stanley et al 1966). According to the Burra Charter, **restoration** means returning the existing fabric of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material. According to Article 9 of the Venice Charter the aim of **restoration** is to preserve and reveal the aesthetic and historic value of a monument and is it based on respecting original material and authentic documents.

The action of **restoration** can be applied to any kind of cultural asset of any scale, thus it is a widely known term in all fields of art and engineering (painting, sculpture or architecture and civil engineering). This operation requires great specialization, so it is necessary for the respective schools to include in their curriculum, courses that promote the involvement of students with this kind of actions. Love and respect for cultural heritage is something that should be instilled in the conscience of future professionals from the beginning of their studies with the appropriate stimuli, as they will be responsible for its preservation in the future. The action of **restoration** is unquestionably linked to the preservation and promotion of cultural heritage. However, over time, different dogmas have been created with a different approach to the **restoration** of a cultural asset, something that everyone involved in the subject must be taught in order to take a holistic approach to the issue.

# WHAT?

## CONTENT

**Restoration** is an act of great importance that contributes to the preservation and promotion of the historic and aesthetic values of a cultural asset and requires great specialization. The term "**restoration**" is found mainly in specialization courses related to the history of architecture and the management of the cultural heritage.

One of the main aims of courses related to conservation is students to acquire skills related to the management of the architectural heritage, one of which is the act of **restoration**, in a way that it respects the values of the buildings and in accordance with international principles and charters as well as local legislation. Specialization in **restoration** actions prevents irreversible interventions that alter the character of buildings. It is necessary to train students to recognize the value of each building and the features that make them special, so that they may be preserved, always in line with legal frameworks and international charters.

# HOW?

## METHODS

A course that includes the concept of **restoration** has as its primary goal to cultivate sensitivity to the cultural heritage of each place. Finally, the knowledge for processing the documentation, the fixing and the evaluation of the current condition of the building, are the basis that will determine the final **restoration** proposal, with the ultimate goal being its reuse and its integration into society.

Teaching in courses that include the term of **restoration** is often carried out through:
- Lectures with theoretical background, which should include bibliographic sources and the legal framework
- Seminars with visiting experts
- Educational excursions with on-site visits
- Practical training on a real case study project (design studio, workshops)
- Interaction with technological tools (software, machines) that can help create and visualize the restoration proposal

The balanced combination of theoretical and practical approaches to the subject of restoration is necessary to carry out a comprehensive study.

# WHY?

## GOALS

**Restoration** is important for cultural heritage, although it is also important to acknowledge how to approach it.

The intentions of the courses related to **restoration** are the following:
- raising students' awareness of cultural heritage and understanding its importance and the need to preserve it.

- acquiring critical thinking about **restoration** works of the past but also being aware of current trends

- teaching the historical context of each era and how it is reflected in its architecture

- understanding of the legal framework and the recommendations of the international charters

- training of students to record and evaluate the historical buildings and their elements

- training of students to deal with **restoration** actions, avoiding any kind of alteration of the original character of the building, respecting each historical phase, while in exceptional cases, where interventions are required, it must be completely distinct and reversible.

## TEACHERS' COMPETENCIES

To teach courses related to building **restoration**, the teacher is required to have the necessary specialization in cultural heritage management and a knowledge of the history of architecture. In addition to theoretical knowledge, involvement with the study and management of historic buildings, practical experience in recording and **restoration** actions is also essential. Along with the existing knowledge he / she has gained from his / her own studies and practice, he / she must be constantly informed / trained about new techniques, technological tools and materials in the field of rehabilitation.

Involvement with key positions in Public sector organizations and departments, offers an additional specialization, as these offer additional knowledge about the relevant procedures to be followed for the **restoration** of listed buildings, based on the standards adopted by competent authorities.

By constant contact with real case studies in the context of professional practice, either in private offices or in relevant departments of the public-sector, good and bad practices are identified and may subsequently be used in the education of the students.

## COURSE TYPE

■ Design Studio (DS)
□ Intensive Workshop (IW)
■ Theory Course (TC)
□ Seminar (short comprehensive) (SSC)
□ Laboratory work (LW)
■ Research Thesis (RT)
■ Field work (FW)
■ Internship Practical training (IPT)
□ Other (O)

## SCALE

■ Construction Detailing and Interior Design Scale (XS)
■ Architecture: Buildings Scale (S)
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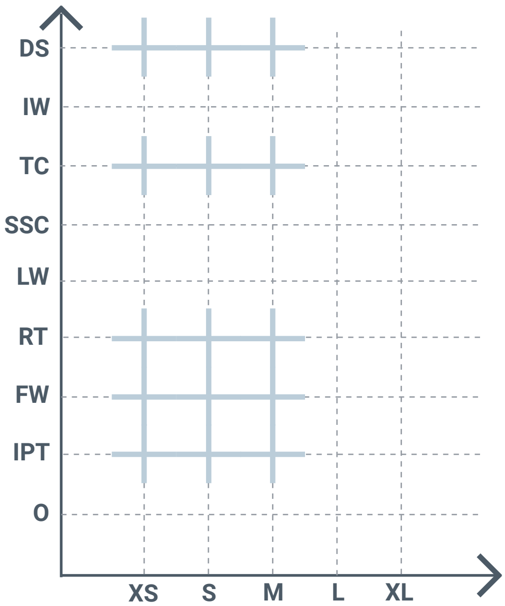


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;

■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;

□ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;

■ the influence of history and theory on the spatial, social, and technological aspects of architecture

□ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

■ how the theories, practices and technologies of the arts influence architectural design;

□ the creative application of the fine arts and their relevance and impact on architecture;

□ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

□ theories of urban design and the planning of communities;

□ the influence of the design and development of cities, past and present on the contemporary built environment;

■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- □ the impact of buildings on the environment, and the precepts of sustainable design;
- □ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ■ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title:

- Restoration of the monastery of Panagia tou Sindi in Paphos

Authors:

- Naso Chyrsochou, Maria Philokyprou, Elena Kalliri, Eleni Petropoulou, Artemis Pseftodiakos

Year of the project:

- 1995-1997

The monastery of Panagia tou Sindi in Paphos has been restored in the form of ruins, with the completion of only the parts for which sufficient evidence was available. The church was reused as a place of worship while the whole complex preserved its sacred character and is available for pilgrims as well as visitors. The entire monastery comprises an archaeological site as well as an individual outdoor museum. The project has been awarded a Europa Nostra prize for the successful restoration of a ruined monastery in a deserted part of the island of Cyprus, respecting traditional technical procedures and maintaining the character of the ruins, in collaboration with many sources of help. Conservation work on the monastery was undertaken by a group of five architects (*Tomi 5: Chrysochou, N., Philokyprou, M., Kalliri, E., Petropoulou, E, Pseftodiakos, A.*) under the supervision of the Museum of Kykkos Monastery in collaboration with the Department of Antiquities.

Figure 1. and Figure 2. The Monastery of Panagia tou Sindi in Paphos

*credits Tomi 5: Chrysochou, N., Philokyprou, M., Kalliri, E., Petropoulou, E, Pseftodiakos, A.*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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[1] Brandi C, 'Theory of Restoration I and III', in Historical and Philosophical Issues in the Conservation of Cultural Heritage edited by Nicholas Stanley Price, M. Kirby Talley Jr. and Alessandra Melucco Vaccaro (The Getty Conservation Institute, Los Angeles, USA Science Press, Division of the Mark Printing Group (1996) 235, 378-379.

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Panayiota Pyla
Danae Zacharia

05/15

**actions**

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# REDEVELOPMENT

/////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

*поновна изградња • Riqualificazione • Ανάπλαση • Reurbanización / Reconstrucción*

## GENERAL DEFINITION/ EXPLANATION

/////////////////////////////////

In its basic definition, **redevelopment** refers to a process of changing an area by replacing older forms of 'development' (buildings/roads) with new ones. As such, **redevelopment** has different 'types,' which involve varying degrees of preservation of built heritage, whether this pertains to historic centres or modern buildings.

The meaning of **redevelopment** becomes more complex when contextualised within late 20th/ early 21st Century global processes of development. a) Historically, in the 1990s, when it appeared as a reaction to mid-20th century waves of development, **redevelopment** constituted a new ethos that aimed to "develop again what is maldeveloped or is now obsolete" (Sachs, 2019, p. 16) and therefore confronted questions of whether it is environmentally or socially sustainable; thus, **redevelopment** became connected to the potentials and challenges of 'sustainable development'. b) As an international development practice, **redevelopment** can also be understood in terms of the geopolitical power relations of the global North-South, raising questions of who benefits and who faces harm from **redevelopment** processes. c) Spatially, the redesign of neighbourhoods/cities/coasts (e.g., 'urban **redevelopment**,' 'housing **redevelopment**' etc), also impacts intangible aspects of space (e.g. traditional trades, lifestyles and activities), and relates to notions of resilience and phenomena of gentrification.

# WHAT?

## CONTENT

The central educational idea is that **redevelopment** needs to be understood not simply as a mode of action, but also as a historical, social and economic phenomenon whose spatial/physical implications can be instructive for future actions.

In teaching about **redevelopment** , one must underline the historical, economic and social context of specific practices of **redevelopment**. Categories can be used to identify where **redevelopment** is happening (coastal/urban/rural areas? Immigrant neighbourhoods?), who it is happening to (all/some citizens? wealthy/ poor?), and highlight the politico-economic, socio-cultural, and spatial dynamics and power relations relevant to each type of **redevelopment**. It is also important to highlight who is funding **redevelopment**, who is initiating/benefiting/harmed by it, and what kind of expertise/knowledge is imparted in the process.

The content should draw on comparable global and local cases, with emphasis on the way spatial/physical significance impacts architectural heritage and informs sustainability concerns. A comparative approach helps to identify patterns and intentions of **redevelopment**, particularly in the global competition of cities (e.g. Interrogation of strategies of creating a favourable city image, or establishing a competitive city identity).

# HOW?

## METHODS

With the aim to cultivate both broad knowledge and critical thinking, teaching will combine an information-oriented approach (i.e. lectures on multiple cases studies around the world, and their historical, social and economic implications) with critical analyses of readings that expose the potentials and the problems of each case of **redevelopment**. Teaching methods could include lectures, seminar discussions and site visits to local cases. The focus of seminar discussions is the critical reading of archival documents and oral histories that speak especially to the value of heritage and the issue of social sustainability. In this way, the learning environment is both learner-centred and knowledge-centred, but also reaches out to assess specific situations in the community. “Critical thinking,” "Critical Evaluation of Cultural Heritage," and "Sustainability Analysis" from an interdisciplinary perspective are tools that can advance the comparative aspect that relates global cases to local examples that impact heritage and sustainability.
The sequence of activities should follow a circular approach; studying global cases, conducting fieldwork locally, engaging critical thinking and then revisiting the global cases.

# WHY?

## GOALS

Information-oriented teaching familiarizes students with development, **redevelopment** and post-development theory that provides the theoretical underpinnings for understanding specific case studies. This leads to a nuanced understanding that guards against problems/pitfalls of **redevelopment** by exposing the dilemmas of development, and of 'sustainable development.'

A case-based approach allows the comparison of different contexts and dynamics where drastic changes in the physical organization of built environments can be linked to social/economic/environmental factors. Furthermore, community engagement through field visits (observations, informal interviews, taking photographs) can provide tools for enhancing critical thinking in workshops (using archival documents and oral histories to brainstorm in teams).
Connecting **redevelopment** to issues of heritage and sustainability (e.g. in the example provided), allows for a more critical view on heritage and sustainability practices, how these are justified, and their possible unforeseen or concealed effects to society and the environment, such as the undoing of the community, the consequences of gentrification etc.

## TEACHERS' COMPETENCIES

- The teacher, as a knowledgeable expert, should be familiar with the historical, spatial, and geopolitical dimensions of **redevelopment** from cross-cultural perspectives.

- The teacher, as a skilful expert, should be able to provide a multiplicity of cases of **redevelopment** as examples (global and local), and effectively draw connections between these and the relevant literature to invoke critical thinking.

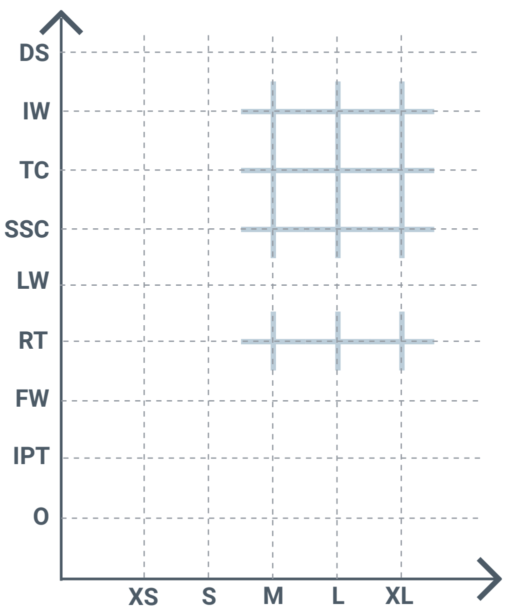
- Given the varied nature and scale of redeveopment case-studies, the teacher as a reflective agent should be able to utilize appropriate teaching methods and adjust the degree of engagement with specific activities to those most suitable to the content (in this case the case-studies).

## COURSE TYPE

- ☐ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ■ Research Thesis (RT)
- ☐ Field work (FW)
- ☐ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ☐ Construction Detailing and Interior Design Scale (XS)
- ☐ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ☐ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ☐ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ☐ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- □ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title:
- Limassol Prokymaea (Molos)

Authors:
- Multiple

Year of the project:
- 1972-1986

The redevelopment of Limassol's coast altered the physical, economic and social fabric of an area that was developed earlier as a port city (Fig. 1). It is tied to issues of both heritage and sustainability, as the old town's preservation and protection were key to reclaiming 1.2km of land in order to protect the existing road and buildings from erosion. The reclaimed land was then utilized for widening the road and creating Limassol's largest public park (Fig. 2). In this way, redevelopment contributed to the deindustrialization of the area, that also initiated processes of gentrification with long term social effects.

Figure 1. Molos, February 1955
*Credits: Photo by Peter G. R. Barlow*


Figure 2. Postcard of Limassol Prokymaea
*Credits: Photo by Stavros & Costas Marmatakis*

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Ana Zorić

06/15

**actions**

statements

# ADAPTIVE REUSE

*адаптивна пренамена • Adaptive Reuse • Συμβατή Επανάχρηση • Reutilización Adaptativa*

## GENERAL DEFINITION/ EXPLANATION

**Adaptive Reuse** is defined as the process of adapting an object to a new function while retaining its authentic architectural characteristics and values. The process seeks to preserve the existing physical structure as much as possible, to preserve the historical value of the heritage, leaving the possibility for repair refurbishment and adding of the necessary elements. This reduces the consumption of building materials, resources, and energy for new construction. On the other hand, the adaptation to the new purpose enables the active life of the building in contemporary conditions, which is the best prevention of active preservation, protection from decay and devastation. To adequately protect the heritage, the procedure requires an expert assessment of the historic value of heritage, suitability of the building for adaptive conversion, a possible adaptation of the building to a new role, and possible functions that correspond to the existing architectural characteristics of the building. In the contemporary practice of urban development, this procedure is considered an effective way to reduce the spread of urban areas and environmental impact by adequate use of existing space.

# WHAT?

## CONTENT

From an educational perspective, it is important to emphasize recognition of key values of heritage and ways of preservation, as well as compatible and desirable contents in the contemporary moment.

Accordingly, it is recommended that the learning process encourage:
- skills of recognizing different aspects of inherited values (physical structure, cultural dimension, historical significance, etc.) worth preserving in modern conditions.

- developing a creative approach to research attractive and compatible content, activities and functions in line with modern needs

In relation to sustainability, it is based on the activation of existing capacities, thus achieving a higher degree of sustainability:

- social sustainability through the effort to preserve socially recognized values and establish desirable functions

- Environmental sustainability through material and resource efficiency, and

- Economic sustainability through cost reduction

# HOW?

## METHODS

In accordance with the key characteristics of **adaptive reuse**, it represents an action in the domain of architectural design, so general teaching philosophy is problem-based, and an adequate research method research by design. In addition to independent research through an architectural project, the method of learning includes research of relevant historical sources and literature review, in order to discover key values of heritage, as well as case studies and consulting experts on adequate implementation techniques. In accordance with the creative aspect of the process, leading methods and tools which should also be engaged within the learning process are critical thinking and critical evaluation of cultural heritage.

# WHY?

## GOALS

The process of **adaptive reuse** can be applied within different spatial scopes and architectural scales, which requires knowledge of several specific areas in learning, from urban design to constructive detail. Accordingly, the focus of learning is primarily on recognizing the domain of action in accordance with the scope and type of heritage and then choosing the appropriate tool in the design process. In this way, the skill of design is developed, through the assessment and recognition of inherited values and a creative approach to reviving them.

## TEACHERS' COMPETENCIES

Referring to the importance of developing the skill of architectural design in the learning process, from the stage of idea to realization, special teaching competencies include knowledge of this area in different stages of development. An interdisciplinary approach is needed in the conceptual phase of the project, through research of the location and relevant sources, to a creative approach to the formation of the conceptual solution. In addition, important and desirable competencies of teachers relate to the field of architectural performance practice, in order to understand the process of realization of the final object and adequate techniques and technologies important for the aspect of preserving the decided authentic characteristics of heritage.

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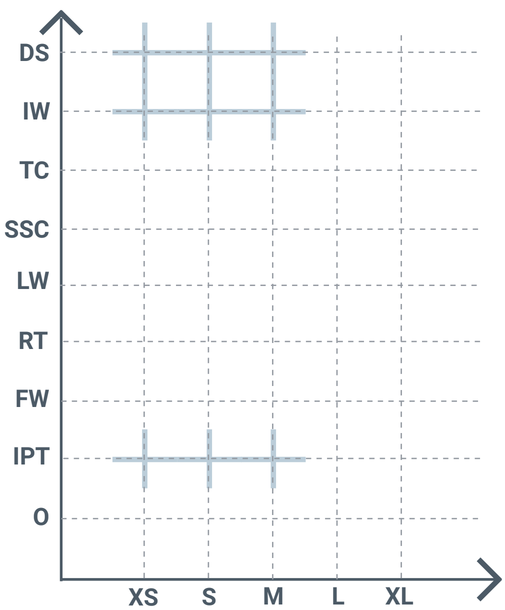


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- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:
- Cultural center Terra Panonica, Mokrin, Serbia

Authors:
- AUTORI Architecture Studio

Year (period) of the project
- 2010

Terra Panonica, a contemporary cultural and touristic center for the creative industries, is a multi-awarded architectural project, realised in 2010. The basic idea of the project was inspired by the former location of a traditional rural estate from 1925. The design of the center relies on traditional construction, but at the same time represents a contemporary interpretation of authentic rural objects. In addition to the design approach, the key specificity is on the organization of the program, which focuses on science, visual arts, music, performance, new media, social sciences, industrial design, and architecture.

Figure 2. Cultural center Terra Panonica, Interior
*Source: Photos by Aleksandra Đorđević*

Figure 1. Cultural center Terra Panonica, Exterior
*Source: Photos by Aleksandra Đorđević*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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07/15

**actions**

statements

# CONSOLIDATION

*консолидација • Consolidamento • Στερέωση • Consolidación*

## GENERAL DEFINITION/ EXPLANATION

**Consolidation** derives from "Consolidate" and from Latin *consolidatus*, past participle of *consolidare* that mean "to make solid"; from 1530s this word is used to say, "to make firm or strong". (www.etymonline.com)

Starting from The *Athens Charter for the Restoration of Historic Monuments* - 1931, **Consolidation** is always present among the Restoration actions to improve the static nature of materials and constructive elements by using innovative materials and techniques. Article 5 specified that consolidation work should "whenever possible be concealed in order that the aspect and character of the restored monument may be preserved".

The *Charter of Venice* (1964) considers **Consolidation** as a part of the Conservation project and approves the use of "modern technique for conservation and construction" in specific situations "where traditional techniques prove inadequate". The Charter insists that new material could be added in Cultural Heritage **Consolidation** only if its efficacy is scientific and experience proved. This statement stresses the importance of considering **Consolidation** as a comprehensive architectural action on the different elements of a historic structure.

# WHAT?

## CONTENT

**Consolidation** aims to restore the mutual relationship that links the different elements of an historic structure. Students have to clearly understand that any change to the building balance should be carefully thought out, and should be based on a *critical judgement of the values and priority* (JUKKA JOKILEHTO, *Concepts in international doctrine: conservation between practice and theory* - ICCROM 2007).

The conservation-restoration process consists of different phases, such as: systematic inspection, survey and documentation; critical-historical interpretation; examination of the resource using scientific methods and the diagnosis of its physical consistency; establishing short-term and long-term plans and programmes for conservation and management.

**Consolidation** is part of the conservation process and it could be considered not only as technical solution to static nature problems, but also an action to safeguard monuments and buildings cultural values.

# HOW?

## METHODS

The general teaching philosophy should involve a holistic approach to **consolidation** "*teaching based on cultural pluralism and diversity of professionals, craftspersons and administrators*" in the Cultural Heritage management. (*Guidelines on Education and Training in the conservation of Monuments, Ensembles and Sites* (1993))

Theoretical and practical activities help students understand methodologies for critical evaluation (historical, social, economic, and environmental) of historic buildings and the **consolidation** design proposal.

The learning styles should include ex-cathedra lectures, laboratory-type critics activities, workshop sessions, and seminars with invited academics and experts. Seminars and on-site visits should help students broaden case studies knowledge and train them to a multiscale and multicultural vision.

# WHY?

## GOALS

The teaching intentions regarding **Consolidation** should produce experts and practitioners who are able to understand the relationship between **Consolidation**, Sustainability and Cultural Heritage Notions, Design Tactics, Tools and Techniques.
The main objective in Master Degrees and Specialisation Schools educational track, should be to transfer analysis methods and architectural design knowledge and skills that can interface 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.

## TEACHERS' COMPETENCIES

Teachers should effectively transfer knowledge about **consolidation** dualism (technical and cultural) to students.

Teachers need to:
- be aware of the cultural and social aspects, theories and technologies that influence historical buildings and goods;
- consider the discussion with colleagues, collaborators, and experts from different academic fields an effective tool;
- not ignore the current policy and legislation (social, environmental and economic) and the critical evaluation concerning Monumental Heritage identification and transformation;
- consider the relationship between theoretical knowledge and technological tools and instruments.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ☐ Research Thesis (RT)
- ☐ Field work (FW)
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## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ☐ Urban Design Scale (M)
- ☐ Urban and Regional Planning Scale (L)
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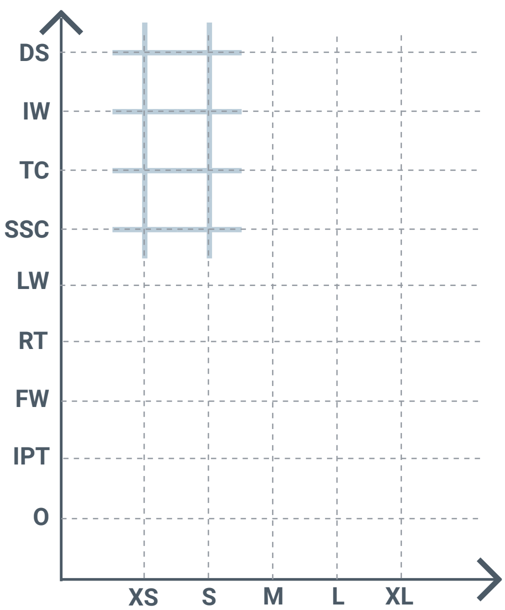


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ☐ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ■ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ☐ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ☐ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- [ ] the needs and aspirations of building users;
- [ ] the impact of buildings on the environment, and the precepts of sustainable design;
- [x] the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- [ ] the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- [x] the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- [ ] the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- [x] the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- [ ] the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- [ ] the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- [ ] the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- [ ] strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- [x] the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- [ ] principles associated with designing optimum visual, thermal and acoustic environments;
- [ ] systems for environmental comfort realised within relevant precepts of sustainable design;
- [x] strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- [ ] critically examine the financial factors implied in varying building types, constructional systems, and specification
- [ ] understand the cost control mechanisms which operate during the development of a project;
- [x] prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- [x] the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- [ ] the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- [x] the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
- Punta della Dogana – Trusses system consolidation

Authors:
- Tadao Ando (chief architect) with Kazuya Okano and Antoine Muller Moriya;

Year (period) of the project
- 2007-2009

The Punta della Dogana complex consisted of 8 «Tesoni» (warehouse) arranged on two floors in the Dorsoduro insula. The restoration works (2007-2009) solved static issues (such as differential subsidence of the foundations and the truss and masonry material vulnerability) and maintained and enhanced the Venetian construction techniques.

The main consolidation works on wooden, and iron elements and implemented the strengthening of the 130 wooden existing trusses such as:

- the recovery of the static functioning of the node as fully as possible, operating on all its components (for example, using metal elements or restoring the previous ones);

- the Slicing (Fettonatura) to extend the deteriorated beam head.

Intervention documentation:: https://youtu.be/BI7xilW6MRE

Pictures credits: https://www.atlantearchitetture.beniculturali.it/museo-e-centro-darte-di-punta-della-dogana/

01 | Punta della Dogana

https://www.atlantearchitetture.beniculturali.it/wp-content/uploads/D16-04_Ando_Venezia.jpg

02 | Punta della Dogana

https://www.atlantearchitetture.beniculturali.it/wp-content/uploads/D16-02_Ando_Venezia.jpg

02 | Punta della Dogana

https://www.atlantearchitetture.beniculturali.it/wp-content/uploads/D16-07_Ando_Venezia.jpg

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Victoria Segura Raya

08/15

**actions**

statements

# TEMPORARY PLANNING AND MEANWHILE SPACES

*привремено планирање и привремени простори • Temporary planning and Meanwhile spaces • Εφήμερες Επεμβάσεις και Αστικά Κενά • Planificación Temporal y Espacios mientras que…*

## GENERAL DEFINITION/ EXPLANATION

"**Meanwhile**" is a search process rather than a conclusive result. It constitutes the theoretical and practical construction of a panorama of methodological reference in the approach, recognition and active research developed on disused spaces, landscapes and architectures in obsolescence or abandonment, influencing the category of spaces "In Transit".

Innovation is in the process of recovering the beauty of frontier spaces. What we have called "**meanwhile**…" is a collaborative, transversal and direct transfer space-time.

The interaction of the local community and the emergence of a feeling of identity and recognition of values are encouraged. It is a process that allows the two realities, the inactive and the emergent, to be brought closer together and that affects the dialogue between the contemplated landscape, the hidden landscape and the wounded landscape.

"In Transit" establishes a cooperation with the place, inviting experimentation and acting as an attractor of contemporary actions in its consideration as landscapes in reclamation. It is an intensifier of what already exists, promoting adaptive reuse so that the healing of the border space acts as a resource for sustainable urban development.

The issues distilled from this experimental and investigative process are discussed under three main theses: reuse, ruin, and vagueness (or uncertainty).

# WHAT?

## CONTENT

The border space, as an emergent result of this described situation, offers us the possibility of thinking about heritage with new tools of a conceptual nature, of methodological testing, of instrumental practice and of active management. An open laboratory capable of becoming a setting for transdisciplinary experimentation that finds its deep reason for being in obsolescent landscapes; in the complex variables that affect these spaces; between artefact and nature; operating among its dynamics; in their social conflicts; between the variability of the scale; working from the breaking of the conventional administrative limits; from the difficulties for its protection and reactivation.

The process is intensified at the margins and not in the centre. This implies a paradigm shift, suggests a move away from the sole responsible planner or designer, towards a new entity or figure, the mediator, which encourages participation, negotiation, the laboratory and fosters the capacity for creative invention, entrepreneurship, integrates the emergent and the meanwhile…, through a centrifugal and non-centripetal process. These qualities are not sufficiently taught or rehearsed in traditional disciplines but are necessary in the interstices, to make borders porous.

"In Transit" introduces a new paradigm in the re-knowledge, process and action on frontier spaces. A new situation that transcends the purely disciplinary and emphasizes the coexistence of productive integration and the reuse of "waiting spaces", what we have called "**meanwhile**...", in a collaborative process of transversality and transference in transit.

# HOW?

## METHODS

We are now talking about active processes of interaction and continuous dialogue with the place. These approaches are made from a scalar, disciplinary and instrumental diversity.

The term "**meanwhile**..." implies that the border space is reprogrammed, reused, recycled, resurfaced, but that process requires entrepreneurship. The designer becomes an actor, researcher and manager of the space. The work in the labyrinth is one of inquiry and search, identification and recognition, transfer and negotiation: time is important, so transit is resilient to changing circumstances.

We propose an investigation from the qualitative to the quantitative.

We are interested in the macro and the micro, the visible and not visible, the temporary and the timeless, the permanent and the ephemeral. We are interested in data, graphs, networks, systems. We are interested in the test as an active process and in this, detect situations, tactics and possible therapies, which are supported by multidisciplinary cartographic techniques and instruments: quantitative research.

Observation, interview, panoramic and aerial photography, bibliographic analysis, review of files and documents, geographic information systems are combined with creative graphic and cartographic production, derives, participatory processes, transfer.

This process of approaching and distancing ourselves from the test samples, in different times and spaces, allows us to contemplate alternative interpretations of reality.

# WHY?

## GOALS

The objective is to approach the analysis of experiences of recognition of borders in different times and spaces, in view of the elaboration of the theoretical framework that allows us to:
1_ Identify innovative patterns of experimentation in obsolescent landscapes, extracting specific tactics, therapies and methodologies that can be transferred as possible processes.
2_ Develop a conceptual systematization of the lines of intervention, which usefully synthesize the tactics, therapies and methods identified.
3_ Establish ways of comparison, cooperation, relationship, transfer and evolution of these experiences with the experiment object of work in the subject, which allow us to critically and purposefully evaluate this processual derive.

We try not only to recognize frontier spaces but to understand them, map them, experience them and transfer them. Creative graphic language is not accidental, it is part of this methodological contribution, showing the dynamic nature of the **meanwhile** space.

The qualitative invites us to action. We propose the effort to capture the subjective, the phenomenological, the emergence and the emergent, their conflicts and contradictions.

## TEACHERS' COMPETENCIES

The special competencies that the teacher must cultivate to effectively transfer knowledge about the term analyzed:

- Incorporate gender, inclusion and social participation.

- Use innovative, adaptive and participatory practices and procedures for the identification, reactivation and preservation of cultural contexts.

- Contribute to the identification, preservation and integration of tangible and intangible heritage in current contexts using a multifocal theoretical and practical approach.

- Use a balanced combination of case studies of local and international heritage to ensure the relationship between the course and current reality.

- Introduce and test strategies and techniques for a comprehensive regeneration using creative approaches (**meanwhile**, participatory processes, multiscale techniques, etc).

- Promotion of continuous training in research towards the PhD.

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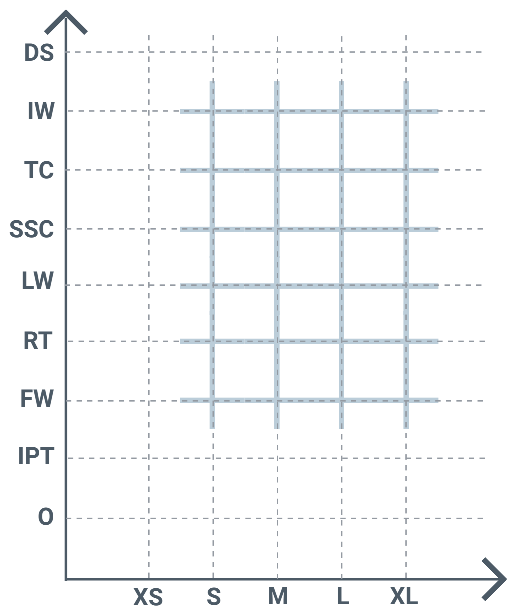


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- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:
- Workshop Thextile: spaces and processes in transit at HYTASAL

Authors:
- research project led by Julián Sobrino Simal and Enrique Larive López

Year (period) of the project
- 2013

From October 3rd to 12th, 2013, a series of activities took place in the unoccupied textile factory, organized by Thextile, an active research project led by Julián Sobrino Simal and Enrique Larive López, professors at the ETSA in Seville.

The economic-industrial activity carried out by the company Hilaturas Y Tejidos Andaluces, S.A.L. (Hytasal) for 15 years has meant an important economic, labor and social significance for the area, with special relevance in the Cerro del Águila neighbourhood where it is located, contributing to the maintenance of this exceptional architectural complex catalogued as Architectural Heritage of the Spanish Modern Movement. After the abandonment of its activity in the first decade of the 21st century, this process "in transit" called Thextile is proposed.

Thextile is an essay with specific research techniques and processes applied to historic industrial spaces in Seville. Through possible actions, the relationships we maintain with the space of memory, with the landscapes of production in Andalusia, are investigated.

Thextile is part of the new research trend represented by industrial archaeology, which in Spain already enjoys recognized academic prestige and institutional support from the Ministry of Culture through the National Plan for Industrial Heritage. The history of Seville, and of Andalusia by extension, must incorporate the material and immaterial remains of the industrial past into their cultural stratigraphy, as a factor of commitment to modernity at an early date, so that part of their recent past is restored to the collective memory.

Thextile proposes:
Spinning-material (cotton + territory + agricultural and industrial heritage)
Spinning-production (architectures + industrial systems + technology + skilled labour + management)
Spinning-creation (creative fabric of the city of Seville + transdisciplinary + university)
Spinning-distribution (administration + marketing + brand image + character of a production)
All this articulated in a Spatial Data Infrastructure where: ...Sow-Collect-Gin-Clean-Carding-Stretch-Bend-Comb-Refine-Twist-Finish-Spin-Design-Produce ...

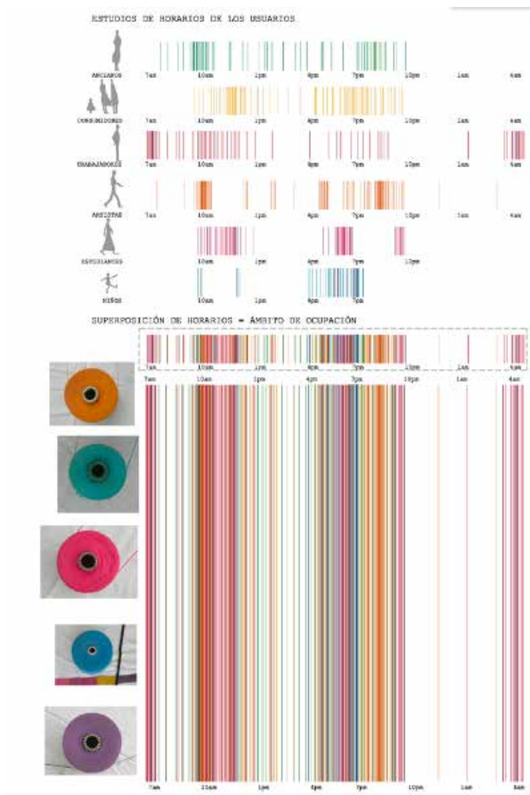


Figure 1. Workshop Thextile. Approximations
*Copyright: Gema Florido, Daniel López, José E. Medina, Lola Reynolds, Ana B. Santos, María Olmedo. 2013*


Figure 2. Workshop Thextile. Contextualization
*Copyright: Enrique Larive López, Victoria Segura Raya. 2013*

Figure 3. Workshop Thextile. Actors
*Copyright: Lolo Vasco. 2013*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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University of Cyprus

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Andreas Savvides

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**actions**

statements

# REHABILITATION AND REFURBISMENT

*рехабилитација и опремање • Riqualificazione • Επανάχρηση και ανακαίνιση • Remodelación / Rehabilitación*

## GENERAL DEFINITION/ EXPLANATION

The significance of **refurbishment** is aimed at long term remodelling of a building, addressing constraints such as circulation and maximizing the potential offered by the site and building context, while **refurbishment** is also the process of improvement by cleaning, decorating and re-equipping it. **Refurbishment** may also include elements of retrofitting with the aim of making a building more energy efficient and sustainable. Of importance in this context is also the lifecycle of a building, which may be significantly extended by effective refurbishment. **Rehabilitation** entails the alteration, improvement or modification of an existing structure where, oftentimes, less than half of the proposed construction work consists of new construction. **Rehabilitation** also entails repair directed toward an accumulation of deferred maintenance; replacement of principal fixtures and components of existing buildings; installation of security devices; and improvement through alterations or additions to, or enhancements of, existing buildings, including improvements to increase the efficient use of energy in buildings. Related costs to the above terms may include labour, materials, tools and other costs for building improvements.

# WHAT?

## CONTENT

The terms **rehabilitation and refurbishment** might be introduced into the life cycle assessment of a potential project, whether this is a single building or part of a building, a building component, at the smaller scale of the spectrum, to an agglomeration or complex of buildings or indeed to an entire historic quarter of a city or of a cultural landscape. Are there both tangible and intangible benefits in engaging in such a project that may be explained and evaluated through the lens of an enlightened cost-benefit analysis and if so how does one go about framing the project proposal parameters. What is the decision to engage in such a measure compared and contrasted against? What are the metrics used in deciding in favour on a renovation and refurbishment project versus, for example, the demolition and rebuilding of an entirely new project? Taking the pillars of cultural, environmental, social and economic criteria into consideration, how does a proposed project measure against each of these pillars and what consideration need to be taken into considerations for making such a decision in the first place?

# HOW?

## METHODS

In this cycle of learning an approach might be to progress from the intangible to the tangible, that is to start with the introduction of ideas from a notional and multidisciplinary perspective, to present specific areas with regards to a subject but from a variety of perspectives and timelines, making initially broader, horizontal connections. It is important at this point to not only introduce and define relevant terminology, but also to become acquainted with the latest body of knowledge and to be introduced to critical thinking for evaluation of both dominant but also of alternative points of view and interpretation of the subject matter. As coursework progresses, the instructor may introduce a hierarchy to the relevance and applicability of the notions introduced, giving ever more specific definitions and focussing them through the introduction of ever more specific bibliographical and case study references. As time progresses and since this is a topic that more often than not culminates in the practical application of knowledge, it is important address both evaluation metrics for refurbishment and rehabilitation proposals but also to teach best practices with regards to the nuts and bolts methods in completing such projects.

# WHY?

## GOALS

The intentions considered in the design of relevant coursework may be organized in an ordered progression that moves from the strategic to the tactical. In the strategic phase of investigation and analysis, the coursework may require the formulation of a brief of strategic intentions that fall within the broad spectrum of sustainable development. At this point the interaction with all relevant stakeholders and relevant entities may be stressed, as part of a shared vision to be realized utilizing a structured dialogue process, the creation of a common set of goals, the setting of work packages and the assignment of specific tasks to all project proponents. As the work becomes more specific there needs to be a roadmap that allows for the transition of works to be made from the more abstract to the more specific and the more applicable. In this, the tactical phase of works a toolset that enables action points to be implemented may be introduced and training in the potential contribution that each tool may be able to contribute towards addressing the practical challenges of arriving at a practical and equitable solution of the problem at hand may be handed out. Students will need to be able to make a conscious and considered selection of the right and most appropriate tools for the task at hand and they need to be able to synthesize the use of these tools in the most effective and efficient methods for project realization.

## TEACHERS' COMPETENCIES

The teacher should pretty much be the holder of all the competencies (the teacher as a reflective agent, the teacher as a knowledgeable expert, the teacher as a skilful expert, the teacher as a classroom actor, the teacher as a social agent, the teacher as a lifelong learner) and to have the ability to structure and to design course content to address all of these requirements. This task applies both to the way in which material is presented in a classroom setting and how different kinds of information may be presented to the students and also on how fieldwork may be incorporated and integrated into classroom exercises.

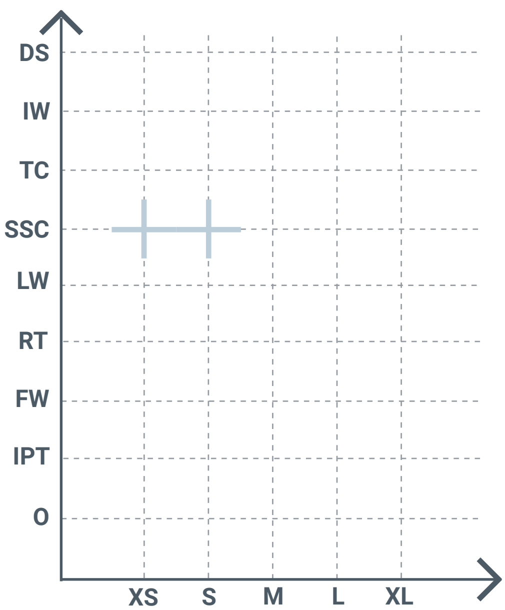
Consequently, an instructor should be:
- Approachable
- Multidisciplinary and open to new ideas and approaches
- A goal setter for the students, working with them to set targets and milestones
- Inspiring, in terms of the coursework material introduced and how this is delivered
- A mediator and also an enabler between the students and their exposure to academia and practice
- A facilitator and instigator for learning and for research that enriches the students' knowledge

## COURSE TYPE

- ☐ Design Studio (DS)
- ☐ Intensive Workshop (IW)
- ☐ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ☐ Research Thesis (RT)
- ☐ Field work (FW)
- ☐ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ☐ Urban Design Scale (M)
- ☐ Urban and Regional Planning Scale (L)
- ☐ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ☐ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ☐ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ■ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

BUILT ARCHITECTURAL /
URBAN DESIGN PROJECT
EXAMPLE

Project title and location:
- Kannikegården, Ribe, Denmark

Authors:
- Lundgaard & Tranberg Architects

Year (period) of the project
- 2015

For more information about project:
https://www.archdaily.com/804321/kannike-garden-lundgaard-and-tranberg-architects

Figure 1. Ribe City center with Cathedral

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Marta García-Casasola

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**actions**

statements

# HERITAGE MANAGEMENT

*управљање наслеђем • Gestione dei Beni Culturali e Paesaggistici • Διαχείριση Κληρονομιάς • Gestión Patrimonial*

## GENERAL DEFINITION/ EXPLANATION

Set of planed actions that have the aim of protecting heritage. Actions that are proposed from an integrated consideration of the asset and from a transdiciplinary perspective that bases decision making on knowledge and reaches agreements through participation of the different agents involved.

**Heritage management** models have changed from a lineal conception of the action of protecting–structured in phases of knowledge, intervention and valuing–, to its understanding as a transversal, relational and continuous process (Mosquera Adell, 2018). Preliminary Studies and heritage characterization, diagnosis and definition of values are developed in this way to lead to the project and its implementation, concluding with maintenance management and preventive conservation.

**Heritage management** requires specific work tools that are fundamentally related with documentary management and knowledge spacialization through the use of graphic tools: planimetric surveys or BIM/GIS models. In a transversal way, the transfer of results is implemented by incorporating dissemination and divulgation actions.

The reformulation of the concept at present, from a sustainable point of view, leads us to talk about the notion of shared management applying participation processes in all phases.

# WHAT?

## CONTENT

Management processes are based on research, protection, conservation and dissemination of heritage to promote its enhancement and utilization as a social asset and a sustainable development factor, as well as to ensure its transfer to future generations. Processes that are based in an integrated consideration of the asset, refining the definition of the environment and context in which they are located and recovering thus the figure of landscape as the action area for enhancement of cultural assets.

# HOW?

## METHODS

The teaching strategy must be located in a real context in which students must be able to face complex heritage problems; KNOWING HOW TO LOOK (around) FROM A HERITAGE PERSPECTIVE.

Concretely, the skills the students need to acquire during learning processes that are related to heritage are:
- Ability to exercise architectural criticism (heritage): knowing how to see/look at heritage.

- Ability to participate in heritage protection support processes. Researching, documenting, intervening and transferring through: protecting, cataloguing, registering, knowing/recognizing, valuing, drafting conservation projects, implementing, communicating, musealizing, etc.

Among their learning objectives, the teaching methodologies used must include:
- Organization of information / accessibility through the utilization of Documentary Management: rigor-ous handling of documentary sources.

- Oral and written communication, using graphic expression tools characteristic of architecture discipline.

- Knowledge management: relational knowledge that goes beyond mere accumulation of information.

- Articulate heritage readings as a result of interpretation and systematization of knowledge, using syn-thesis capability.

- Recognise the cultural values that characterize the asset object of study.

- Propose design actions aimed at preserving the object of study providing mechanisms to signify what has value.

# WHY?

## GOALS

KNOWLEDGE / INTERPRETATION / PROPOSAL / INTERVENTION / TRANSFER are the tasks that define the methodology of a heritage project.

The Heritage Project as a process serves currently one general objective that is CONTEXTUALIZATION, integrated vision in the broadest sense of the word, through a way of handling cultural assets, that has to be realized from a TRANSDISCIPLINARY perspective and relying in PARTICIPATION processes. These sustainable processes are based in consensus and start from shared knowledge as imperative condition to build what has lately been called “Science of Culture” (Didi Huberman, 2009) or “Public Science” (Cri-ado, 2018).

## TEACHERS' COMPETENCIES

Explain and reference if there are any special teacher competencies that need to exist in order to effec-tively transfer knowledge about the analysed term. What is the profile of the teacher: the teacher as a reflective agent, the teacher as a knowledgeable expert, the teacher as a skilful expert, the teacher as a classroom actor, the teacher as a social agent, the teacher as a lifelong learner, etc.?

Reflect on pedagogical culture and pedagogical innovations.
Reflect on answers provided by experts in IO2 Questionnaire.

Capacity to exercise architectural heritage criticism from expert knowledge of complex heritage situa-tions.
Handling of architectural projects interpretation, interventions in heritage from a sustainable perspective.
Abilities to communicate results of cultural assets research using textual resources but especially graphic ones.
Capacity to plan and propose intervention strategies in heritage from an integrated perspective, basing decision making in knowledge and using participative processes to ensure consensus.

## COURSE TYPE

- [ ] Design Studio (DS)
- [ ] Intensive Workshop (IW)
- [x] Theory Course (TC)
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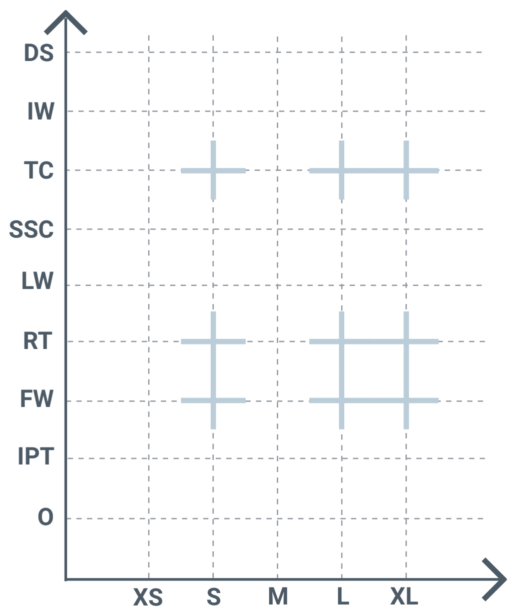


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- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
- Andalusia, Spain

Authors:
- Andalusian Historical Heritage Institute (IAPH)

Year (period) of the project
- 2017

As an example of good practices in heritage management, we propose the planning strategy of IAPH, a public business agency and agent of the Andalusia knowledge system that for more than 30 years has exercised leadership as a work model for heritage management support.

The Andalusian Historical Heritage Institute (IAPH) (Instituto Andaluz del Patrimonio Histórico, IAPH) was founded in 1989 as a 'Special Programme' of the I General Plan of Cultural Assets (1989-1995) of the regional government of Andalusia (Junta de Andalucía). IAPH general goals are: intervention, research, conservation and valuing of cultural heritage, as well as innovation, knowledge transfer and setting guidelines for cultural heritage management.

IAPH MISSION is to make progress in Cultural Heritage for social growth and wellbeing. IAPH exists to generate innovative knowledge in heritage, transfer it and guide cultural politics as a development and smart growth factor in the autonomous community of Andalusia.

Junta de Andalucía | Consejería de Cultura y Patrimonio Histórico | Instituto Andaluz del Patrimonio Histórico

Figure 1. IAPH institutional logo. Department of Culture, Regional Government of Andalusia.

Figure 2. : IAPH headquarters at the 'Claustro de Legos' of the 'Monasterio de la La Cartuja de Santa Mª de las Cuevas' (Sevilla)

*Copyright: IAPH Instituto Andaluz de Patrimonio Histórico (Andalusian Historical Heritage Institute) headquarters at the 'Claustro de Legos' of the 'Monasterio de la Cartuja Marta García-Casasola, 2021*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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[6] González-Varas, I. (2014) *Las ruinas de la memoria. Ideas y conceptos para una (im) posible teoría del patrimonio cultural*, México, D.F.: Siglo XXI

[7] Marchán Fiz, S. (2015) Patrimonio: resistir en la globalización. *En revista ASTRAGALO* Núm 20. Julio 2015. Buenos Aires: Universidad Abierta Iberoamericana, 2015

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Jelena Ristić Trajković

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**actions**

statements

# NATURE BASED SOLUTIONS

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*природом инспирисана решења • Soluzioni ecocompatibili • NBS / Σχεδιασμός που εμπνέεται από φυσικές διεργασίες • Soluciones de Origen Natural*

## GENERAL DEFINITION/ EXPLANATION

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**Nature-based solutions** (NBS) are "concepts that bring nature into cities and those that are derived from nature. NBS address societal challenges and enable resource recovery, climate mitigation and adaptation challenges, human wellbeing, ecosystem restoration and/or improved biodiversity status, within the ur-ban ecosystems" (definition of the CA17133 Implementing **nature-based solutions** for creating a re-sourceful circular city). The **Nature-based Solutions** Initiative defines NBS as "actions that involve the protection, restoration or management of natural and semi-natural ecosystems; the sustainable management of aquatic systems and working lands such as croplands or timberlands; or the creation of novel ecosystems in and around cities. They are actions that are underpinned biodiversity and are de-signed and implemented with the full engagement and consent of local communities" (**Nature-based Solutions** Initiative, University of Oxford).

The implementation of NBS in the built environment is not a new concept. Throughout the whole histo-ry of the building, people have been inspired by and used materials and techniques enabled by the natu-ral surroundings.

NBS is strongly related to sustainability and heritage, especially regarding conservation and environmental management of semi-natural protected areas, climate mitigation and adaptation challenges, and human wellbeing in built environments.

# WHAT?

## CONTENT

The full capacity of NBS educational potentials remain unexplored, whilst innovative programmes related to NBS are still missing systematic development of formal and informal education programmes in this area. Expert workshop hosted by the German Federal Agency for Nature Conservation (Kabisch at all., 2016) identified four main knowledge gaps relating to:
(1) the effectiveness of NbS;
(2) relationship between NbS and society;
(3) design of NbS; and
(4) implementation aspects.

At the same time, these are the main problems and topics that need emphasis from an educational per-spective. Concerning sustainability and heritage, the last three are of particular importance considering the specificity of design interventions within the heritage areas and the necessity of a sensitive approach to the preservation and promotion of specific heritage values.

NBS methodologies are relevant in both the design and selection stage.  Also, it is essential to empha-size that NBS actions are valid and have significance for interventions on multiple urban and architectural levels and scales: from architectural scales of building details, single objects and lots to urban scales, such as cities and regions, and as such have a role and potential in various curricula and modules (archi-tecture, urbanism, technologies), both in theoretical and practical issues.

# HOW?

## METHODS

Considering that the NBS covers a vast field of applied techniques and technologies, concepts, typology of ob-jects, building densities, and different implementation scales, educational methods mainly depend on the scale and the educational focus. In the following paragraph, some of the most relevant aspects regarding educational methods are listed to generally cover different scales and topics regarding NBS:

- The general teaching philosophy: Problem-based, Place-based, Integrated/inter-professional, Community-based, Design-based, Multi-site, Systematic, Symbiotic, etc.

- The leading methods and tools: Critical Evaluation of Cultural Heritage, Sustainability Analysis from an in-terdisciplinary perspective, Research by Design, Site analysis, etc.

- Learning styles and activities: Active learning through different activities: 1) visual—drawing diagrams, out-lining processes, watching videos, design; 2) auditory—lectures, participating in group discussions; 3) tac-tile—taking field trips, doing hands-on activities, etc.

- Possible/appropriate learning environment: project-based, knowledge-centred; assessment-centred, etc.

# WHY?

## GOALS

Implementation of NBS mainly remains fragmented and marginal and needs urgent attention in educa-tion to more profound research and improvement of the implementational aspects.

Teaching intentions should cover NBS implementation within heritage environments (both natural and built) through seeking new strategies to tackle urban challenges in a sustainable way. The focus should be on the improvement of the following specific goals and areas:
- climate action for adaptation, resilience and mitigation,
- impacts on health and wellbeing,
- ecosystem services,
- biodiversity conservation,
- environmental sensitivity
- place-based interventions.

It is necessary to cover what tools and methodologies should be used and developed to target the men-tioned specific goals, monitor impacts, and evaluate the strengths and weaknesses of response options.

Design tactics should depend on recognizing and identifying the correct balance between recognized heritage values, performance/ program needs and environmental characteristics of the site. The main goal is to implement resilient and sustainable solutions to a wide range of societal, ecological and eco-nomic challenges and problems.

## TEACHERS' COMPETENCIES

Having in mind the breadth of the topic and spatial implementation scales, various approaches to educa-tion are possible, and depending on that, various pedagogical models. Expertise and knowledge of NBS techniques and technologies, as well as various aspects of their implementation, are required. However, there is no specific teacher profile that is most adequate. Teacher can be a reflective agent, a knowl-edgeable expert, a skilful expert, a social, etc. depending of a course concept and focus within NBS im-plementation.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
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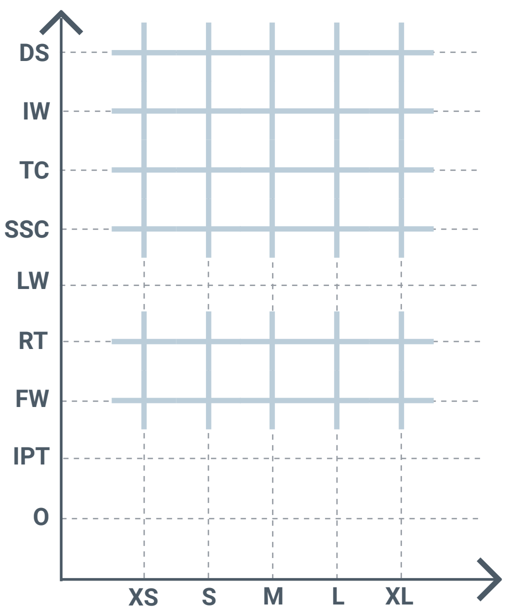


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

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- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- □ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
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- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- □ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- □ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- □ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Project title and location:
- Hundertwasser Haus in Vienna, Austria

Authors:
- Friedensreich Hundertwasser with architect Joseph Krawina as a co-creator

Year (period) of the project
- 1983-1985

“Hundertwasser Haus“ in Vienna is one of the spectacular historical cases of the building that brings nature into cities and housing architecture and those that is inspired by nature. This concept represents the best practice of building greening systems integrated not only with building environmental function and aesthetics but also with user lifestyles. In line with that, it contributes to overall sustainability, not only environmental but also social.

Figure 1. Wien - Hundertwasserhaus


Figure 2. Wien - Hundertwasserhaus

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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# PUBLIC ADVOCACY FOR SOCIAL PARTICIPATION

*јавно залагање за учешће грађана • Progettazione partecipata • Δημόσια στήριξη για την συμμετοχή της κοινωνίας των πολιτών • Promoción Pública de la Participación / Inclusión Social*

## GENERAL DEFINITION/ EXPLANATION

In 2018, EUROPA NOSTRA in its document titled "Awareness Raising and Advocacy" states: *Advocating heritage is a demanding, ethical, political and social activity that is highly complex…. Raising awareness and advocacy campaigns in the heritage field imply organized communication activities which aim to create awareness on particular topics related to heritage; influence perceptions, beliefs, attitudes and behaviour among the targeted population; and change specific policies and practices*. Social participation in heritage management and relevant decision making processes, presupposes all previous actions and is explicitly demanded by various international conventions and recommendations on heritage issues. UNESCO in the RECOMMENDATION ON THE HISTORIC URBAN LANDSCAPE (even though this is applicable in all heritage types), states: *Civic engagement tools should involve a diverse cross-section of stakeholders, and empower them to identify key values in their urban areas, develop visions that reflect their diversity, set goals, and agree on actions to safeguard their heritage and promote sustainable development*. Regarding the interpretation and presentation of heritage for engaging local communities in such processes, in the ICOMOS CHARTER FOR THE INTERPRETATION AND PRESENTATION OF CULTURAL HERITAGE SITES is stated: *The training of qualified professionals in the specialised fields of heritage interpretation and presentation is a crucial objective. Basic academic conservation programmes should include a component on interpretation and presentation in their courses of study*.

# WHAT?

## CONTENT

The importance of public communication as an essential part of the larger conservation pro-cess (variously describing it as “dissemination,” “popularization,” “presentation,” and “inter-pretation”) implicitly acknowledge that every act of heritage conservation—within all the world’s cultural traditions - is by its nature a communicative act. The need for a clear rationale, standardised terminology, and accepted professional principles for communicating the Inter-pretation and Presentation of heritage is evident.

Interpretation should explore the significance of a site in its multi-faceted historical, political, spiritual, and artistic contexts. It should consider all aspects of the site’s cultural, social, and environmental significance and values (ICOMOS CHARTER FOR THE INTERPRETATION AND PRESENTATION OF CULTURAL HERITAGE SITES). Adoption and implementation of those stand-ards can be achieved through participatory processes, capacity building, awareness raising and education.

Students should learn how to prepare communication material and plan actions for advocating heritage issues and raise public awareness. Introducing students to participatory procedures in heritage management projects could be simulated during intensive workshops, studio courses and field work.

# HOW?

## METHODS

- General teaching philosophy: Problem-based, Information-driven, Integrated/inter-professional, Subject-/discipline-based, Systematic, Symbiotic, Integrated (Multi-site, Community-based)

- Leading methods and tools which should be engaged within the learning process: "Critical thinking”, "Critical Evaluation of Cultural Heritage”, "Sustainability Analysis" and “Heritage significance and values”  from an interdisciplinary perspective,

- Learning styles and activities: Group cooperation, on site fieldwork,  intensive workshops with local stakeholders and community members, seminars and theory courses

- Possible/appropriate learning environment: student-centred; knowledge-centred; method-centred, assessment-centred; and community-centred.

# WHY?

## GOALS

The Interpretation and Presentation of cultural heritage sites must be the result of meaningful collaboration between heritage professionals, host and associated communities, and other stakeholders. (ICOMOS CHARTER FOR THE INTERPRETATION AND PRESENTATION OF CULTURAL HERIT-AGE SITES)
Participatory planning in heritage projects demand knowledge of specific methodologies and skills by heritage professionals for addressing all local stakeholders involved. Related courses (either theory / seminars, or, studio based / workshops) should cover related topics:
- Methods and skills for surveying, mapping and making data available for participatory plan-ning

- Knowledge of relevant International Conventions and Recommendations, Best practices / State of the art, strategies, methodologies and policies in presenting / interpreting heritage through a multifaceted approach touching upon various heritage dimensions (i.e. historical, so-cial, environmental, spiritual, political, economic, technical)

- Integrated Conservation practices at urban design and urban and regional planning scale

- Evaluating and proposing new functions in heritage sites for serving the needs and aspirations of local communities

- Developing and communicating strategies and narratives for addressing and engaging local communities and stakeholders through a holistic approach of heritage and environmental is-sues within the frame of UN SDG.

- Knowledge of national and international legislative and administrative framework for planning and implementing heritage, landscape and urban planning related projects

## TEACHERS' COMPETENCIES

Introducing students to “accepted professional principles for communicating the Interpretation and Presentation of heritage” in public advocacy, awareness raising actions for participatory planning, the tutor should:
- address interdisciplinary approaches of heritage management and interpretation as a reflective and social agent

- organize theory syllabus for all related issues and function, if necessary, as a moderator for invited speakers and experts

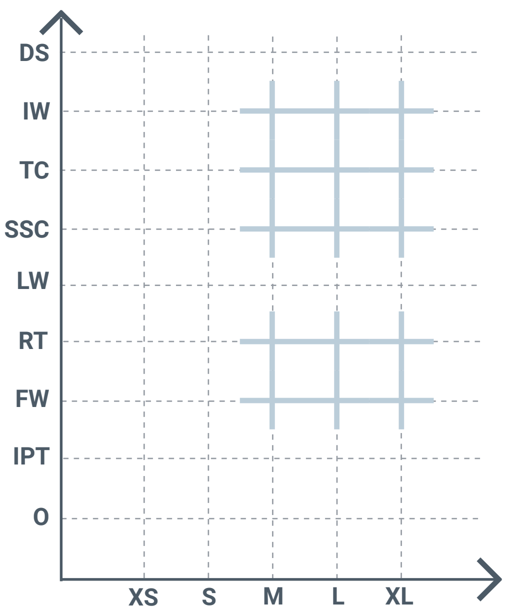
- organize field work and promote hands-on students interaction with local agents

## COURSE TYPE

- [ ] Design Studio (DS)
- [x] Intensive Workshop (IW)
- [x] Theory Course (TC)
- [x] Seminar (short comprehensive) (SSC)
- [ ] Laboratory work (LW)
- [x] Research Thesis (RT)
- [x] Field work (FW)
- [ ] Internship Practical training (IPT)
- [ ] Other (O)

## SCALE

- [ ] Construction Detailing and Interior Design Scale (XS)
- [ ] Architecture: Buildings Scale (S)
- [x] Urban Design Scale (M)
- [x] Urban and Regional Planning Scale (L)
- [x] Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [ ] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [ ] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [x] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [x] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [x] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [x] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- [ ] how the theories, practices and technologies of the arts influence architectural design;
- [ ] the creative application of the fine arts and their relevance and impact on architecture;
- [ ] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- [x] theories of urban design and the planning of communities;
- [x] the influence of the design and development of cities, past and present on the contemporary built environment;
- [x] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- □ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- □ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
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- ■ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ■ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- Sustainable Urban Conservation of Historical Cities Come Back to Thirty-Five Years of Observation in Fez Medina, Morocco

Authors:

- ADER-Fez

Year (period) of the project

- 2018-2019

for more information:
https://openarchive.icomos.org/id/eprint/1681/1/Conservation-Based_Cultural_Environmenta.pdf
http://openarchive.icomos.org/id/eprint/1946/

In Fez medina, urban conservation is linked to urban redevelopment and thereby represents a significant component of urban design with respect to sustainability. The overall rehabilitation strategy for this historical area is to alleviate the constraints through a sustainable conservation program, especially the historic housing stock, the social development, the historic monuments and the urban environment including the architecture heritage, which could not be launched without seeking adequate tools (institutional, financial and technical) for its implementation. ADER-Fez, the Agency for the Dedensification and Rehabilitation of Fez Medina, places stakeholder participation at the core of its implementation strategy, including social animation and social participation in housing rehabilitation, and sets a program of emergency intervention on historic monuments and buildings, housing units threatening collapse and on infrastructure and urban facilities, with two concerns: the safety of the human lives and the safeguarding of cultural heritage and traditional constructions of architectural quality adapted to the requirements of modern life.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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# CIRCULAR ECONOMY

*циркуларна економија • Economia circolare • Κυκλική Οικονομία • Economía Circular*

## GENERAL DEFINITION/ EXPLANATION

Directly linked to the overarching principle of Sustainability and henceforth to the notion of Resilience, the idea of a **Circular Economy** stems as a critique to the linear economic model that is dominant since the establishment of the Industrial Revolution, at the end of the 18th century. Characterised in broad terms by the extraction – manufacturing – disposal sequence, or in other words by a take – make – waste mentality, the linear model, with regards to the building sector is currently a major contributor of waste on a global scale. Instead, the circular model introduces several stages after the manufacturing process, entailing Use and Repair, Reuse, Repurpose, Recycle, and Replenish, in an attempt to keep re-feeding the supply of products and services with the valuable assets of products or assemblies that continue their use beyond their "envisaged lifespan". In short, a **Circular Economy** strives to keep products and materials in circulation, at the highest of their value, for as long as possible, through reuse, re-cycling, reconstruction, (re)distribution and (re)sharing, while minimizing waste production. The introduction of the circular model on building / construction practices seeks to minimise the ecological footprint of the construction sector magnifying the importance of secondary building materials, their cataloguing / distribution/ availability / reuse but also entails a major shift in current design practices for allowing de-construction or re-appropriation of components/assemblies, units, etc.

# WHAT?

## CONTENT

The **circular economy** model is currently being introduced in the building sector through tentative steps and mainly through pilot projects, due to the interdisciplinary and societal shift that it entails in dealing with construction and certainly deconstruction of building projects. Circularity currently presents an open topic whereby heritage studies can provide resources/insight into instances of pre-industrialised economies that have been well documented with special interest on their vernacular building/urban design practices and on how these adapt over time to economic means and resources, which due to their scarcity made circularity almost a prerequisite. Furthermore, the adoption of circularity practices for current building practices entails the cataloguing / testing / redistributing of building materials / assemblies / units, etc allowing an inventory of materials with credentials for age, availability, strength, etc; an area of studies which is totally within the means of architects/restorers who have been trained for such cataloguing and testing practices. Circular practices abolish fast demolitions and rather opt for a meticulous study of buildings before they are decommissioned or renovated, treating essentially any building as a bank for materials. The establishment of such local/national inventories, more than serving new building projects, can be of manifold interest to building historians and restorers alike.

# HOW?

## METHODS

Such a notion, necessitating a shift in the wider economic practices and the means of production, can be introduced through lectures / seminars, an information-oriented approach which also should be Integrated/ inter-professional. Further and more in-depth studies of the notion in the context of applications – problem/design based approaches – can be facilitated through studios or project/research thesis; these can also introduce/expand on community based approaches which are essential for the application of the circular model.  A critical interdisciplinary evaluation of built heritage through the lens of “circularity” can enrich our understanding of the use of vernacular practices and can be used as a valuable medium in the introduction of the term.
The application of the circular concept in design projects/practices entails an analytic approach that can be driven both by heritage studies (well established methodologies for cataloguing) and by sustainability analysis (material properties/depletion of natural resources) requiring an interdisciplinary supervision and critical thinking on the part of students. In line with the above, students and experts in Greece have hinted to the need for a hands-on student and community-centred learning environment on matters transgressing sustainability and built heritage.

# WHY?
## GOALS

- Introduction to **circular economy**, key concepts and EU / national strategies that promote **circular economy**. Analysis of the benefits from the integration of circularity and obstacles that inhibit its development

- International and national context, strategies and policies adopted in the direction of the **circular economy** concerning the construction sector which represents 50% of all mined materials and is responsible for more than 35% of total waste production in the EU

- Introduction to stakeholders, involved groups and bodies in the construction sector, which with their participation and involvement can create a channel of communication, which will encourage the exchange of knowledge, information and knowhow

- Best Practice and Case Studies for Circularity in Building Construction projects / companies in the construction industry that integrate circularity in their philosophy and production process, helping to reduce their ecological footprint.

- Best Practices - Material Passports and digital building material platforms/databases; Introduction to examples of applied digital circularity platforms, review of functions and services offered.

## TEACHERS' COMPETENCIES

In order to introduce such an notion, which is then translated into action plans for the industry and the wider public but also into research and design approaches utilising novel ICT  or social tools, the educator needs:

- To enable a transdisciplinary reading of the relevant bibliography, becoming a moderator of experts' or invited speakers.

- To transgress from the role of the knowledgeable expert to that of the reflective agent both during theory delivery and also in the context of studio supervision.

- to enable the reading of case studies on local endeavours in economic – construction industry circularity, introducing an on-site, hands-on approach enabling links with the industry, requiring interpersonal and networking competences

## COURSE TYPE

- ■ Design Studio (DS)
- □ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- ■ Research Thesis (RT)
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## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
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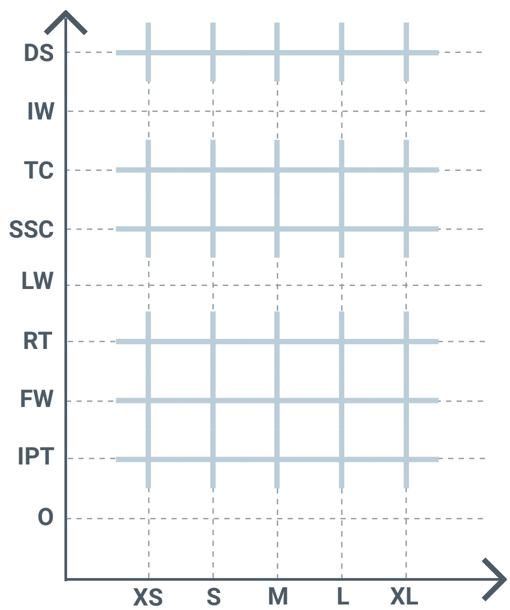
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
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- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- the needs and aspirations of building users;
- the impact of buildings on the environment, and the precepts of sustainable design;
- the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- principles associated with designing optimum visual, thermal and acoustic environments;
- systems for environmental comfort realised within relevant precepts of sustainable design;
- strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- critically examine the financial factors implied in varying building types, constructional systems, and specification
- understand the cost control mechanisms which operate during the development of a project;
- prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- CIRCULAR RETROFIT LAB
  Full Renovation of prefabricated student housing modules for multiple uses, Brussels, Belgium

Authors:

- Studied under the BAMB (Buildings As Material Banks), Horizon 2020 project,

Year (period) of the project

- 2015-2018

Link: Circular Retrofit Lab at VUB by CRL KanaalZ EN
https://www.youtube.com/watch?v=Tg0neDSbeJg

This case study clearly highlights the implications of applying the notion of circularity in the renovation of some of the most pertinent attempts of modernism to introduce standardisation and interchange-ability of functions while ensuring high quality cost-effectiveness and repeatability/ expandability. The prefabricated/ standardised (student) housing example has had many applications across the greater area of the EU which nowadays have historic value but also represent challenges for their urban/building transformation. The particular pilot project deals with the process of introducing circularity in the process of their innovation, focusing on testing dismountable, adaptable and reusable solutions for maximizing waste reduction. The pilot developed a co-creative process all along the (re) design, (re) build, (re)use, repurpose or dismantling phases. This necessitated a close collaboration with all the value network stakeholders and future users in the early development phase. The university organised several round tables with industry stakeholders where design solutions were debated and improved, as well as hands-on workshops with students where solutions were tested.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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**actions**

statements

# DEVELOPING COULTURAL ROUTES AND ITINERARIES

*развој културних рута и итинерара • Progettazione di itinerari culturali • Ανάπτυξη πολιτιστικών διαδρομών • Desarrollo de Rutas e Itinerarios Culturales*

## GENERAL DEFINITION/ EXPLANATION

According to the ICOMOS Charter on Cultural Itinerary (2008), a **cultural itinerary** is “Any route of communication, be it land, water, or some other type, which is physically delimited and is also characterized by having its own specific dynamic and historic functionality to serve a specific and welldetermined purpose, which must fulfill the following conditions:
a) It must arise from and reflect interactive movements of people as well as multi-dimensional, continuous, and reciprocal exchanges of goods, ideas, knowledge and values between peoples, countries, regions or continents over significant periods of time;
b) It must have thereby promoted a cross-fertilization of the affected cultures in space and time, as reflected both in their tangible and intangible heritage;
c) It must have integrated into a dynamic system the historic relations and cultural properties associated with its existence“.
This consentual definition given by ICOMOS is not identical to the one included in the Practical Guidelines to the implementation of the UNESCO World Heritage Convention (2019), that speak about “heritage routes” even though they refer to this type of assets.
Cultural routes, however, are not historic phenomena of universal relevance and that have generated a shared heritage throughout time and space. They are instruments of promoting and, sometimes, managing heritage, specifically designed around a topic that can even be based on a historical route, but that does not necessarily imply the existance of a phisycal route, used throughtout a broad period of time and that have generated cultural exchanges and heritage assets as a consequence of its shared use by different cultures or civilizations.
In conclusion, cultural and turistic routes are intelectual and intentional creations, while Cultural Itineraries “are not simple ways of communication and transport which may include cultural properties and connect different peoples, but special historic phenomena that cannot be created by applying one’s imagination and will to the establishment of a set of associated cultural assets that happen to possess features in common“ (ICCR, 2008).
Promotion, dissemination, tourism and marketing are the essential objectives of the touristic-cultural routes, while Itineraries are complex and multidimensional heritage assets that emerged as a response to other needs (spiritual, religious, comercial, etc.) (Ibid). The variety of cultural routes is limitless, from the promoted by the Council of Europe, at an European level, obviously, but even intercontinental, going through cultural routes of national o regional range, to the routes with touristic-cultural character that are in many territories, cities, municipalities, or networks between them. Routes can also be grouped from a thematical or typological point of view, by the way they are transited (virtually, on foot, by bicicle...) (Martínez, 2011).

# WHAT?

## CONTENT

**_Cultural Itineraries and Heritage Routes**: their interest and potential from a didactic and educational point of view is huge, because they serve to illustrate the new types of heritage assets, the fusion of cultural, natural and immaterial assets (Martínez, 2010), the processes associated with the World Heritage Convention and List, and the complexity of management and protection of multidimensional assets that traverse territories and heritage with very diverse regulations. They also are essential resources for sustainable development (especially through tourism) and to promote intercultural dialogue if they are correctly handled with the use of tracking indicators (Martínez, 2011).

**_Cultural Routes** (of all types): their interest and potential from a didactic and educational point of view is also huge, because they have an important creative component that works very well as a practical exercise in which is required to work in an interdisciplinary way, or at least in group, and apply theoretical knowledge about many key concepts: heritage management and protection, searching for alternative heritage narratives, sustainability and sustainable cultural tourism foundations, heritage interpretation and presentation, musealization, design of infrastructures for the reception of visitors, design of corporate image, etc.

# HOW?

## METHODS

The **teaching strategy** is different in Cultural Itineraries and Cultural Routes, but must combine theoretical foundations about them with a practical dimension based on the ability of recognizing the assets and their heritage situation, so that they will be able to make analysis, management, protection and promotion proposals.

The **abilities** to be acquired during learning processes are:
- Ability to identify and characterize the different types of cultural, natural and immaterial assets.
- Ability to describe the heritage situation (conservation status, level of protection, management model, promotion…) of the assets that make up an Itinerary or Route, considered both individually and globally.
- Ability to identify the potential of the mentioned assets and their context to promote a sustainable development based on heritage and the keys of sustainability (especially of public visits and reception infrastructures).
- Ability to participate in processes of protection support. Researching, documenting, intervening and transferring to, cataloguing, registering, knowing/recognizing, valuing, drafting conservation projects, implementing, communicating, musealizing, etc.

The **teaching methodology** must consider this learning objectives:
- The organization of information / accessibility through the use of Documentary Management: rigorous handle of documentary sources.
- Oral and written communication, using tools from various disciplines (graphic expression, geographical information systems, interpretation and presentation of heritage…).
- Knowledge management: a relational knowledge that transcends the mere accumulation of information.
- Articulate heritage lectures as a result of interpretation and systematization of knowledge, using the ability of synthesize and creativity to create new narratives.

# WHY?

## GOALS

The analysis of Cultural Itineraries and the proposal for the creation of Cultural Routes must be oriented to the recognition and implementation of every phase of protection, and from there cover several heritage, cultural and social objectives: Identify the different types of cultural, natural and immaterial assets and their landscape and territorial dimension; Promote sustainable and equal development based on heritage; Enhance joint and interdisciplinary research and dissemination of a shared heritage, sometimes even between various countries and regions; Diversify heritage tourism and its various market niches, improving the experience of public visits; Coordinate the different typologies of cultural and natural assets, management models, administrations and public and private actors that come together in the cultural itineraries and cultural routes and their promotion; Increase of the dissemination and social and economic impact of emerging heritage that benefit from the aggregate value of the itinerary or route.

## TEACHERS' COMPETENCIES

Knowledge and ability to comprehend and differentiate Cultural Itineraries and Cultural Routes, and be able to transmit the adequately.

Comprehension and ability to translate the vocabulary of heritage protection and management to the students' parlance. Comprehension and ability to translate to the students parlance the various bases of sustainability and how they can contribute, heritage conservation, promotion of Cultural Itineraries and design and activation of Cultural Routes.

Ability to plan and propose strategies of identification and intervention in heritage from an integral perspective, basing decision making on knowledge and using participative processes to ensure agreement.

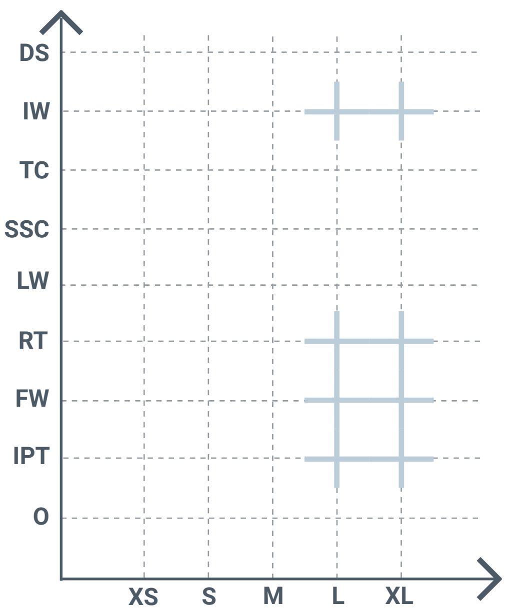
Ability to encourage the interdisciplinary team work required to study this type of assets (the Itineraries) or design and promote Cultural Routes.

## COURSE TYPE

- ☐ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ☐ Theory Course (TC)
- ☐ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- ■ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ☐ Construction Detailing and Interior Design Scale (XS)
- ☐ Architecture: Buildings Scale (S)
- ☐ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ☐ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ☐ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ☐ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ■ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ☐ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ☐ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Given that we speak about Cultural Itineraries and Cultural Routes, we propose one example of each, even though the variety, as mentioned before, is limitless:

**_Cultural Itinerary:** the way of Santiago is the prime example of Cultural Itinerary. Its registration process, in 1993, in the World Heritage List gave rise to the concept itself (ICOMOS, 1994). It was the great arterial way of medieval times, through which people, ideas and artistic movements and, in conclusion, wisdom and knowledge transited in both directions. It was the main engine of Romanesque and, afterwards, Gothic art, and a spiritual way that currently is not only religious, but integrates many other cultural and natural values, being also a touristic and natural resource of great importance.

**_Heritage Routes** registered in the World Heritage List: apart from the Route of Santiago, we can find, in other continents, the Qhapaq Ñan, Routes of the Inca Empire (Argentine/Bolivia/Chile/Colombia/Ecuador/Peru, 2014) or the Silk Roads: the network of routes of the Chang'an-Tianshan corridor (China, Kazakhstan y Kyrgyzstan, 2014).

**_Cultural Route:** the paradigmatic examples at transnational and European level are the Cultural Routes of the Council of Europe (the 45 routes that have obtained the seal can be found in https://www.coe.int/en/web/cultural-routes/cultural-routes-database-main-page). They also emerge with the mention of this seal in the way of Santiago (in 1987). We can also mention Transrománica, the Prehistoric Rock Art Trails, European Mozart Ways, amog various well managed examples of diverse typologies of assets (https://www.coe.int/en/web/cultural-routes/by-theme).

**_At national and regional level:** we usually highlight the way of Don Quijote, whose origin was on the fifth centenary of the publication of the first part of Cervantes' famous work. It is not only one of the biggest ecological corridors of Europe, but most importantly, a touristic a management model that aims to interconnect the numerous eco-touristic resources and cultural and natural assets of the five provinces of Castilla la Mancha in an organized way.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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**actions**

statements

# MICROCLIMATE IMPROVEMENT

***микроклиматска унапређења • Controllo microclimatico • Μικροκλιματική αναβάθμιση • Mejora del Microclima***

## GENERAL DEFINITION/ EXPLANATION

The term **microclimate** characterises the climatic conditions in a defined outdoor area whose size may range widely corresponding to a courtyard, a street, a district or a city. **Microclimate improvement** varies seasonally, defined by the adjustment of climatic parameters, such as air temperature, wind flow and radiation balance, both towards outdoor comfort conditions for pedestrians and towards indoor space energy savings. According to Oke (1987) the climate beneath roof level "produced by microscale processes operating in the streets" is an "amalgam of microclimates each of which is dominated by the characteristics of its immediate surroundings".

**Microclimate improvement** depends on multiple design parameters such as built density, materials, vegetation, anthropogenic heat, atmospheric pollution etc and applies to various fields and scales of design, from urban or landscape design to the design of outdoor spaces around buildings. In relation to sustainability, microclimates are linked with urban heat island phenomena and resilience to climate change as well as with human comfort and well-being and energy savings. In relation to cultural heritage, **microclimate improvement** is a moderate, non-intrusive design approach, aiming at comfort and energy savings with minimal interventions and impact on historic space qualities.

Within architecture studies, qualitatively, **microclimate improvement** is an inherent aim of environmentally sensitive design integrated in the design process while quantitatively, it can be explicitly measured and evaluated based on specific criteria, through monitoring or analytic tools as a distinct part of design projects.

# WHAT?

## CONTENT

Microclimate development around buildings and within urban areas is the result of human activity and the built environment. Urban microclimates are characterised as "inadvertent climate modification" by Oke (1987) however urban and building design decisions may be redirected towards positive effects and microclimate improvement.
In architectural education emphasis is needed in the influence of microclimate on human well being, social interaction, energy savings and urban resilience as well as in the main design parameters which trigger microclimate modification within cities. The crucial details on this topic are the climate parameters that define the microclimate conditions, and the tools and methods for their assessment.

Approaches, requirements and limitations for the observation, monitoring, simulation and evaluation of microclimate conditions and their improvement through design, have been widely investigated and documented internationally in various climates and built environments. The continuous research on the topic highlights its global significance and supplies abundant knowledge and data.
In architecture studies the curriculum may include:

- theory and physics behind microclimate development
- influencing factors and methods of improvement in the built environment
- local and global impacts, social, economic and environmental in terms of sustainability and cultural heritage
- microclimate parameters analysis
- measurement and assessment methods

# HOW?

## METHODS

Within architecture studies, qualitatively, **microclimate improvement** is a target inherent in environmental sensitivity integrated at all stages of the design process while quantitatively, it can be explicitly measured and evaluated based on specific criteria, through monitoring or analytic tools as a distinct part of design projects.

- General teaching philosophy: Problem-based, Information-driven, Design-oriented, Systematic, Symbiotic, Integrated (Multi-site, Community-based)
- Leading methods and tools which should be engaged within the learning process: Critical evaluation of urban space and cultural heritage qualities, weaknesses and potential, systematic evaluation of microclimate parameters through observation, measurement and/or analytic computation, design proposals and assessment with analytic computation.
- Learning styles and activities, Group co-operation, on site fieldwork, computational analysis, simulation tools, design efficiency evaluation
- Possible/appropriate learning environment: student-centred; knowledge-centred; method-centred.

# WHY?

## GOALS

The teaching intensions regarding **microclimate improvement** focus in supplying the available information on theory and methodology and promoting consolidation of knowledge through experimentation with design proposals and evaluation. Specific areas to be covered in the learning teaching process can be categorised in a. aims of microclimate improvement, b. analysis methods & tools and c. evaluation criteria. More specifically:
- Improve comfort and well-being in open spaces
- Enhance vigour and social interaction in urban areas
- Improve urban resilience to climate change
- Mitigate urban heat island phenomena
- Regenerate downgraded urban districts
- Reduce building energy requirements
- Urban climatology
- Observation and monitoring methods and tools
- Computational analysis methods and tools
- Evaluation of alternative scenarios (assessment and comparison)
- Improvement goals (reduction targets, case specific optimal microclimate conditions)
- Available standards regarding comfort
- Best practices

## TEACHERS' COMPETENCIES

In order to effectively transfer knowledge about **microclimate improvement** the teachers' competences and profile could feature:
- the teacher as a knowledgeable expert, in the fields of architecture, urban design, urban planning, urban climatology, biometeorology, building physics
- the teacher as a skilful expert, able to combine theoretical principles with design practice and the use of specialised instrumentation, analytic computational tools and big data
- the teacher as a lifelong learner able to update skills and knowledge in the times of unceasing technological innovation, immersion of analytic tools, global urban population increase and climate change

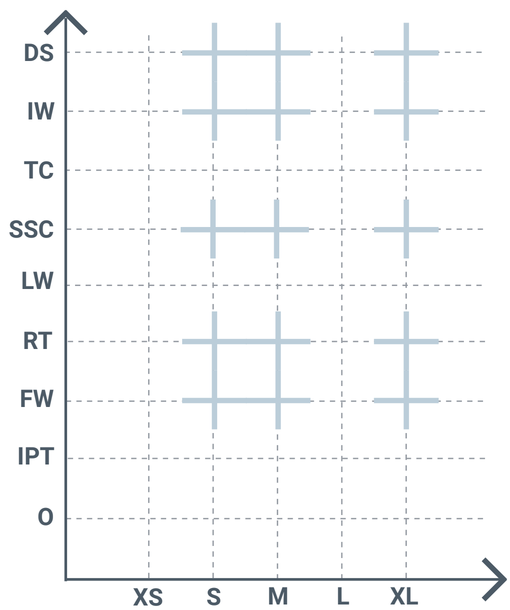
Courses' content about **microclimate improvement** could combine:
- theoretical aspects of urban climatology, biometeorology and design
- reflections on the social, economic, and environmental impacts of microclimate conditions in urban environments
- contemporary legislation, regulations and requirements, national and international
- fieldwork and use of specialised instrumentation for microclimate analysis
- introduction of analytic computational tools and methods
- application of the basic principles and methods on urban design projects or buildings' outdoor space design and assessment of the design proposals

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- □ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- □ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- □ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- □ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- □ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

////////////////////////////////////////////

Project title and location:

- Bioclimatic upgrade of the greater area of Hrimatistiriou Square, Thessaloniki, Greece

Authors:

- Directorate of Urban Planning and Architectural Studies, Municipality of Thessaloniki, arch. L.Topli, arch. A.Spiliotopoulos, and arch. K. Mpletsa

Year (period) of the project

- 2011-2016

Figure 1. Digital models of the project site for microclimate simulations with envimet (a) before interventions and (b) after interventions
*source: Bioclimatic Study, Directorate of Urban Planing and Architectural Studies, Municipality of Thessaloniki*

The project of bioclimatic redevelopment at the area of Hrimatistirio square in Thessaloniki is an urban redevelopment project focusing on bioclimatic criteria and pedestrian comfort, aiming at the improvement of microclimate parameters, influencing outdoor thermal comfort and building energy requirements, in a downgraded district of significant historic and cultural heritage value. The proposal based on a call for redevelopment of open spaces in Greek cities with goals for minimum reductions of temperatures and thermal indices in extreme summer conditions, included pavement material replacement with “cool” surfaces on streets and squares of the district, additional trees and vegetation, water elements for evaporative cooling and exterior fans at pedestrian height for air velocity increase, and reached the required goals.
https://cool4thess.thessaloniki.gr/

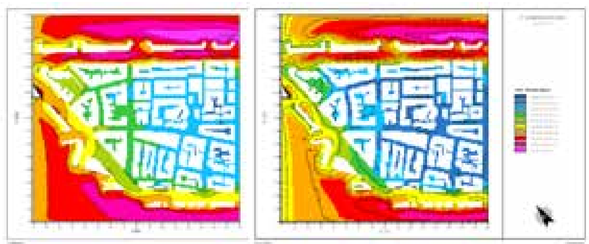


Figure 2. Digital maps of summer midday air temperature values in the project site before and after interventions .
*source: Bioclimatic Study, Directorate of Urban Planing and Architectural Studies, Municipality of Thessaloniki*

Figure 3. View of Emporiou square before and after the intervention
*Source Authors*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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[2] Givoni, B. (1998). *Climate considerations in building and urban design*. New York: John Wiley & Sons Inc. ISBN: 978-0-471-29177-0

[3] Erell, E., D. Pearlmutter, and T. Williamson (2011). *Urban Microclimate – Designing the Spaces between Buildings*. Oxon, New York: Earthscan. ISBN 978-1-84407-467-9

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[5] Nikolopulou, M., N.Chrisomallidou, K. Steemers, R. Compagnon, J. Kang, N. Kofoed,G. Scudo, L. Katzschner (2004). *Rediscovering the Urban Realm and Open Spaces (RUROS), 2001-2003*. Key Action 4, "City of Tomorrow and Cultural Heritage", from the program "Energy, Environment and Sustainable Development", within the Fifth Framework Program of the EU. ISBN: 960-86907-2-2

[6] Bruse, M. (2004). ENVI-met v.3.0: Updated Model Overview. http://www.envi-met.com/

[7] Matzarakis, A., F. Rutz and H. Mayer (2006). Modelling the thermal bioclimate in urban areas with the Rayman Model. In *Proccedings of the 23rd PLEA conference*, Geneva, Switzerland

[8] Santamouris, M. (Ed). (2000). *Energy and climate in the urban environment*. London: James & James (Science) Publishers Ltd.

[9] Chatzidimitriou, A. and S. Yannas (2016). Microclimate design for open spaces: Ranking urban design effects on pedestrian thermal comfort in summer. *Sustainable Cities and Society* 26, 27-47. http://dx.doi.org/10.1016/j.scs.2016.05.004

[10] Tsoka, S., A. Tsikaloudaki, T. Theodosiou (2018). Analyzing the ENVI-met microclimate model's performance and assessing cool materials and urban vegetation applications–A review. *Sustainable Cities and Society,* 43, 55-76. https://doi.org/10.1016/j.scs.2018.08.009

# TOOLS

Image Rectification

3D printing

As-Built / As-Found Recording

Space Syntax

Morphogenesis Study

Mapping, Documenting, Cataloguing

Use of GIS Technology

Historic Building Information Modelling - HBIM

Colaborative Cartography

Collaborative workshop - CHARRETTE

Artistic approaches (photography, video, performance)

Heritage Value Matrix

Thermal/Energy Simulation

Lighthing SImulation

(Post)-occupancy evaluation

Petrography Archaeometry

Digitalization of Heritage

Conservation Status Evaluation

Università Iuav
di Venezia

Iuav

Caterina Balletti

01/19

**tools**
statements

# IMAGE RECTIFICATION

*реституција фотографије • Foto-raddrizzamento • Διόρθωση / ανάκτηση εικόνας • Retoque de Imagen*

## GENERAL DEFINITION/ EXPLANATION

**Image rectification** is a photogrammetric plotting method that allows to obtain a photoplan with a known metric content.

Its metricity derives from the fact that it is composed of images that have undergone a treatment from a geometric point of view in order to become orthogonal projections at a given scale and therefore be directly measurable.

From a projective point of view, photography is a central projection in which objects change shape and size according to their distance from the centre of perspective. From the analytical point, once the reference system is established, the relationships between image and object depend on 9 parameters that describe the position of the plate in space (external orientation) and the geometric characteristics of the camera (internal orientation). In the particular case where the object to be detected is a floor, the parameters are reduced to eight: the reason lies in the fact that there are relationships between the nine original parameters.

This makes **image rectification** particularly useful in the context of restoration for a clearer reading of architectural surfaces and as a teaching tool in courses.

# WHAT?
## CONTENT

The use of **image rectification** in restoration and survey courses is a fundamental tool for students to understand some fundamental aspects of architecture and our heritage, such as matter and form. Today they are a substantial part of the photogrammetric production that serves to support the historical, physical and chemical investigations that are usually carried out on the monuments. Since for years the architectural representation has not only been presented in vector form but also in photographic form (think of the use of geometrically correct images for the mapping of 3d information models), the need arose to have images in which it is guaranteed a certain degree of chromatic fidelity in addition to the metric one. Today the need arises to acquire calibrated colours that become a specific thematic analysis for the monument: the chromatism that must be able to be verified not only in space but also in time. Space and time are relevant factors in relation to sustainability and heritage.

# HOW?
## METHODS

An interdisciplinary approach allows to understand more accurately the importance of this geometric treatment from images, to identify which are the most significant application cases for the use of images both from a point of view related to the learning process and to that of analyses. Students must understand both metric (in terms of survey accuracy) and diagnostic use, through the possibility of extracting information from images.

# WHY?

## GOALS

To increase the understanding of our cultural heritage, documenting the state of conservation and allowing to identify and plan possible interventions.

## TEACHERS' COMPETENCIES

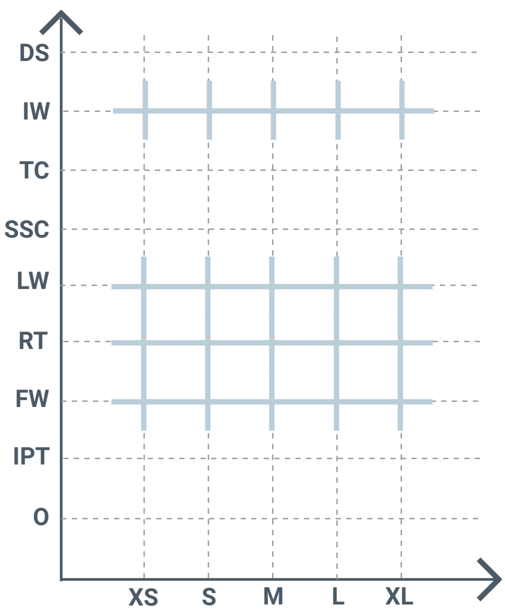
Teachers must have scientific competence and a skilful expert about surveying and, more specifically on photogrammetry in order to effectively transfer knowledge about **image rectification** and their use in a documentation or restoration process

## COURSE TYPE

- □ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
- □ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- □ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- □ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ■ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- □ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- □ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- □ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

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- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

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- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Tool application:

- Area Carlo Scarpa at the Querini Stampalia in Venice

Authors:

- 

Year of the application:

- 

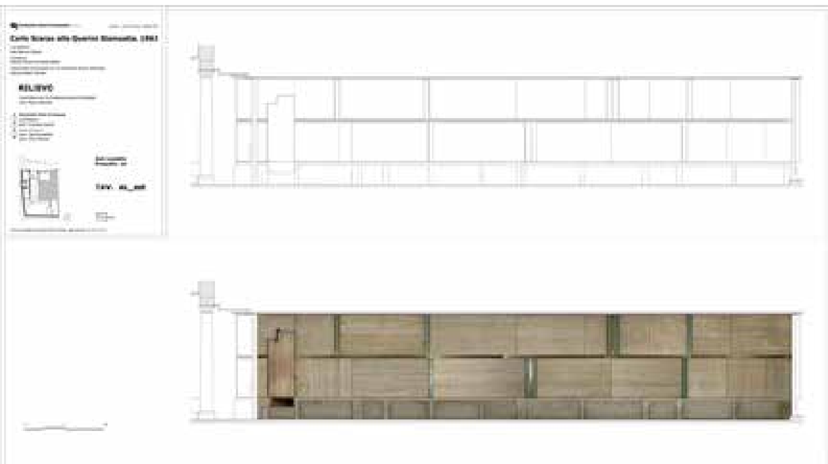

Figure 1. Image rectifications of all the surfaces of the Area Carlo Scarpa at the Querini Stampalia in Venice - 1:20
*Source: Iuav - Laboratorio di Cartografia e Gis - CIRCE*

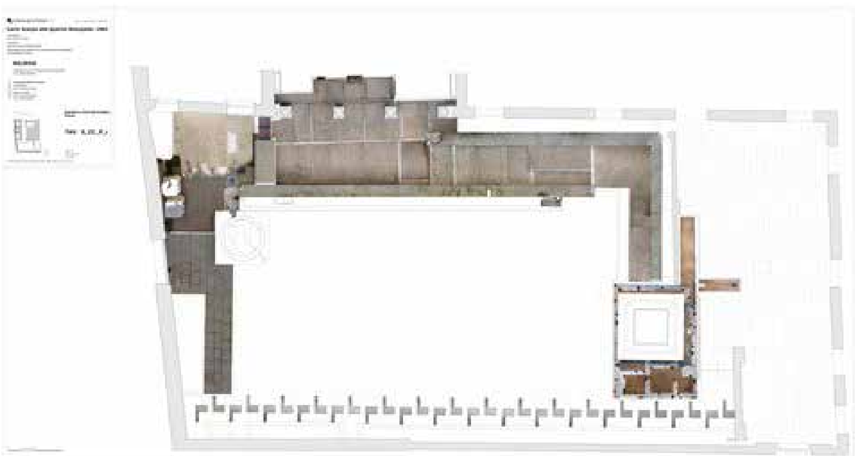

Figure 2. Image rectifications of all the surfaces of the Area Carlo Scarpa at the Querini Stampalia in Venice - 1:20
*Source: Iuav - Laboratorio di Cartografia e Gis - CIRCE*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Tool application:
- The survey of the Arsenale’s Wall in Venice

Authors:
-

Year of the application:
-

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH


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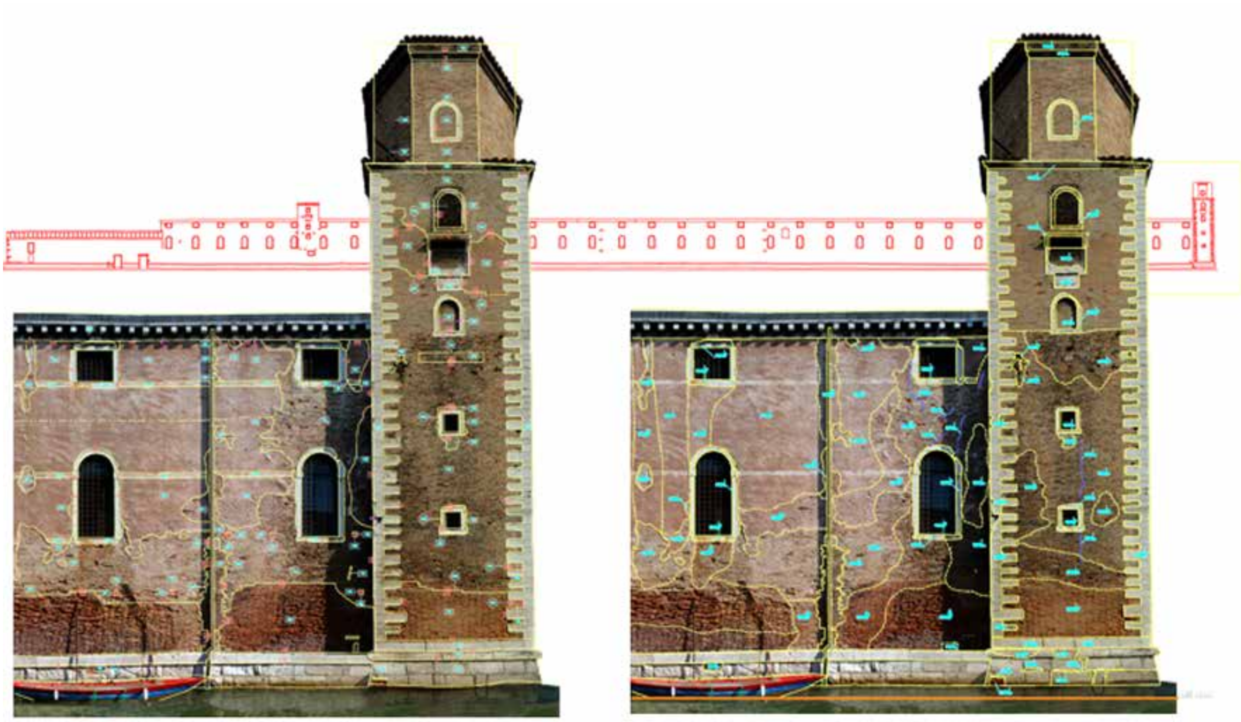

Figure 3.The survey of the Arsenale’s Wall in Venice - about 4 km length, scale 1:50
*Source: Iuav - Laboratorio di Cartografia e Gis - CIRCE*

University of Cyprus

UCY

Odysseas Kontovourkis

# 02/19

## tools

statements

# 3D-PRINTING

*3D штампа • Stampa 3d • Τρισδιάστατη εκτύπωση • Impresión 3D*

## GENERAL DEFINITION/ EXPLANATION

**3D Printing** and Additive Manufacturing are similar and generic terms used to describe "technologies that based on a geometrical representation creates physical objects by successive addition of material. These technologies are presently used for various applications in the engineering industry as well as other areas of society, such as medicine, education, architecture, cartography, toys and entertainment." (BS ISO/ASTM 52900-15, 2015).

Other terms, for instance Rabid Prototyping, have been also used to describe similar processes that aim at solidified products through material deposition in layers. The development of such techniques has been started since 1980s, for instance in the work by Kodama (1981), where a first example of **3D Printing** by "exposing liquid photo-hardening polymer to ultraviolet rays" and by "stacking the cross-sectional solidified layers" was investigated.

During **3D Printing** evolution other techniques have been also developed that include among others Selective Laser Sintering (SLS), Inkjet Powder Printing and Fused Deposition Modeling (FDM) (Wu et al, 2016). Fields of application include among others aerospace and automotive industry, engineering, architecture, art, education, medicine, etc. (Graffar et al., 2018) for the development of parts and entire structures in real scale but also for the development of prototypes in smaller scales.

The last few decades the application of **3D Printing** has been expanded to include the construction sector due to the advantages that can bring towards a more sustainable construction industry, aiming at material reduction, freedom in production of any form, etc. (Kontovourkis, 2021; Camacho et al, 2017). Also, **3D Printing** can be leveraged towards multi-sensorial experiences in the field of cultural heritage through 3D production of tactile models used in museums for educational and learning purposes (Neumüller et al, 2014).

As can be seen from the application examples, **3D Printing** technology offers great application possibilities in education due to sustainable and multi-sensorial opportunities that offer, which can lead to the production and appreciation of any 3D shape and structure.

# WHAT?

## CONTENT

From educational perspective in relation to sustainability and heritage, **3D Printing** is considered as a tool that can provide an added value to the conventional research methods of recording and representation of sustainable buildings and architectural heritage.

The ability of **3D Printing** to accurately replicate in various scales and in 3D space any building morphology is one of the advantages that can be emphasized. The use of different materials with emphasis on their environmental friendly potential can also be stressed. Hence, apart from their application as tool for representation, **3D Printing** can be associated with the selection of different materials, a significant aspect towards sustainable architecture.

Nowadays, **3D Printing** is considered as a valid method that can be applied for documentation, recording and representation of sustainable buildings and cultural heritage in various scales, aiming at a holistic representation and appreciation of those examples. In this direction, a great interest and continuous evolution of **3D Printing** methods are observed. Also, a steep learning curve and widespread application of **3D printing** tools and techniques are currently noticed among the general public. The scope of content and capabilities of the **3D Printing** tool can be integrated into a curriculum as part of existing teaching and research methods. Activities may include **3D Printing** representation in various scales of sustainable and heritage buildings for perception and understanding of issues related to their morphology, details, materials, textures, etc. In addition to 3D Printing skills other important knowledge that might be acquired before the physical prototyping of buildings and artifacts include laser scanning and 3D modelling. All these are considered as important skills throughout the learning process.

# HOW?

## METHODS

The general teaching philosophy of addressing **3D Printing** is problem-based and according to the theme under investigation. This may also involve design-based approaches that lead to the design development and fabrication of various projects in architectural and urban scale. Through the process of designing, 3D modelling and **3D Printing**, the students are engaged in a holistic design-to-prototyping learning experience that involves all aspects of design development. This holistic approach allows critical thinking as regard the appropriate **3D Printing** tools applied based on different case studies as well as critical evaluation of the 3D printed outcomes. Learning environments involve one-to-one tutorial throughout the design phase, but also tutorials for tools' learning and application as well as practical work experience in the fabrication labs that involves **3D printing** and testing.

# WHY?

## GOALS

Teaching intentions may focus on design case studies for prototyping and testing of **3D Printing** tools. Initially, the teacher can cover the use of **3D Printing** tools at a theoretical level. Then, all the necessary technical information can be provided in order for the students to understand the tool and the different methods/materials applied. Finally, through practical examples in the laboratory, students might be given the opportunity to materialized their general ideas into physical products, from the design to the prototype development phases.

## TEACHERS' COMPETENCIES

In order for the teacher to effectively transfer knowledge about **3D Printing**, competencies related to the theoretical teaching and application of **3D printing** tools and techniques are necessary. The teacher as a knowledgeable and a skilful expert can transfer his/her knowledge and experiences to the students through a critical point of view. This will provide to the students all the necessary skills for the future development of their own projects, where different **3D Printing** tools, materials and techniques can be applied in order to enhance sustainable and architectural heritage.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
- □ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ■ Research Thesis (RT)
- □ Field work (FW)
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## SCALE

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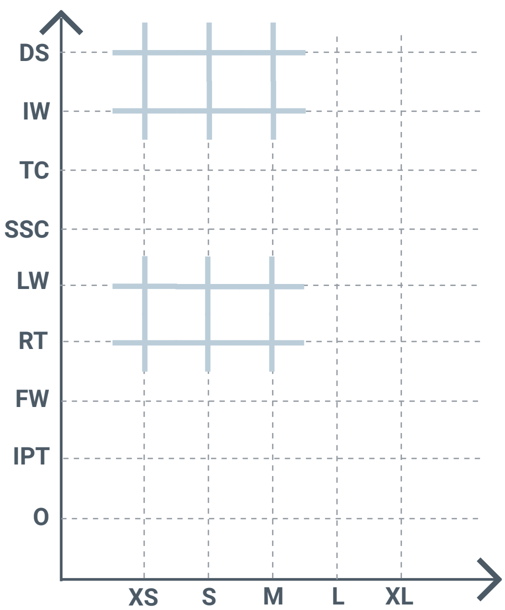


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- □ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- □ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

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**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

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■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;

□ the potential impact of building projects on existing and proposed communities.

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□ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;

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□ principles associated with designing optimum visual, thermal and acoustic environments;

□ systems for environmental comfort realised within relevant precepts of sustainable design;

□ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

□ critically examine the financial factors implied in varying building types, constructional systems, and specification

□ understand the cost control mechanisms which operate during the development of a project;

□ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

□ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;

□ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;

□ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

////////////////////////////////////////////

Tool application:
- TECLA 3D printed habitat

Authors:
- WASP 3D Printing company and Mario Cucinella Architects

Year of the application:
- 2020

This example is an imaginary project realized by WASP 3D Printing company and Mario Cucinella Architects. The aim is the development of a 3D printed habitat consisting of innovative ecological houses. This will allow low cost housing opportunities and reduction of construction time in areas with rising populations. In order to achieve this a large-scale 3D Printing technique is applied with the parallel use of reusable and recycle clay-based material (3dWasp, 2020).

3dWasp. (2020). Available from: https://www.3dwasp.com/en/3d-printed-house-tecla/. Accessed: 29/07/2021.

Tool application:
- 3D Printing and Sagrada Familia restoration

Authors:
- Sagrada Familia consortium

Year of the application:
- N/A

This example discusses the application of 3D Printing technology for the accurate physical development of 3D prototypes of complex shapes designed by Antoni Gaudi. This allows representation of initial shapes, further investigation and decision-making regarding restoration of the Sagrada Familia.

How 3D Printing is Changing Architecture: Learning from the Sagrada Familia Team in Barcelona (2015). Available from: https://i.materialise.com/blog/en/how-3d-printing-is-changing-architecture-learning-from-the-sagrada-familia-team-in-barcelona

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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ARISTOTLE
UNIVERSITY OF
THESSALONIKI

AUTH

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Sofoklis Kotsopoulos

03/19

**tools**

statements

# AS-BUILT / AS-FOUND RECORDING

*снимање изграђеног и/или затеченог стања • Rilievo Stato di Fatto • Αποτύπωση υφιστάμενης κατάστασης • Registro del Estado Actual*

## GENERAL DEFINITION/ EXPLANATION

The term “**as built / as found recording**” refers to the multiple recording and analysis of the phases of a historic building: a. In mapping the current situation, b. In the investigation of the original form and c. In the recording during and after the restoration work. Although the term is new, it attempts to link widespread and very important processes during a restoration study. The term focuses on the two most important phases of the historic building, whose analysis aims at the most substantial and effective intervention. In addition, it aims to record in detail the work performed during the restoration, but also after the completion of the construction site. The term is directly related to both heritage and sustainability, as it is an essential tool for any form of intervention on a historic building. It is practically impossible to study without a detailed record of the existing condition (in terms of architectural imprint, construction details, architectural features etc.), while it is necessary to record the condition of the building after any operation, which captures all performed works and details of the "new" construction. Consequently, the importance of teaching this tool in higher education, in cognitive subjects related to historic buildings, becomes apparent.

# WHAT?

## CONTENT

The target of the tool as built / as found revolves around understanding the methods of recording and analyzing a historic building, as well as their importance for heritage and sustainability. In this context, special emphasis should be placed on in-depth analysis of the data and documented recording of both the current situation, the original form and the post-restoration situation.

Teaching a relevant subject in higher education is considered particularly important, as it is one of the basic tools for intervention in a historic building. Teaching should be characterized by both theoretical lectures and on-site field research on a damaged building and/or a restoration site, which will eventually lead to a laboratory work. The aim of the course would be to learn the working methods and to critically evaluate the findings from the field and from the produced designs. Eventually, students would be provided with the basic knowledge to record, analyze and document historic buildings and restoration methods, but at the same time, bring them in touch with the importance of protecting architectural heritage and the social and environmental benefits.

# HOW?

## METHODS

The teaching philosophy of the course for the tool **as built / as found recording** would be characterized by a multidimensional approach. At first, it is an Integrated / inter-professional subject, in which, ideally, all the related specializations would be involved (in an interdepartmental postgraduate course).

The course should first provide the technical knowledge for the recording of a historic building, its general characteristics and details. Particular emphasis should be placed on the accuracy of the designs, the detail and the graphic elaboration. In addition, it should provide the resources to develop critical thinking and interpretation of all data provided by both the building and site itself, as well as records or other data.

The course could begin with a brief theoretical explanation of the importance of the tool, embedded in the context of heritage and sustainability, as well as techniques. Then will follow the field work, where all the necessary data will be collected, such as measurements, photographic documentation etc. Finally, the laboratory work will be carried out, where it should result in the design performance and the writing of the respective explanatory and analytical texts.

# WHY?

## GOALS

The importance of teaching the recording of historic buildings, both in the current situation and in their condition after the restoration work is evident from its role in the holistic protection and preservation of the architectural heritage. Through this course, students come in contact with the values of historic buildings, its peculiarities and the problems they will face in the effort to protect and reintegrate them into contemporary life. At the same time, the course should encourage students and cultivate a broader awareness of architectural heritage protection and sustainability, as well as how these two concepts can be related. Thus, teaching should not be limited to technical issues per se, but should summarize a broader perspective of cultural, financial, environmental, and social issues, integrated into the overall curriculum of architectural studies.

## TEACHERS' COMPETENCIES

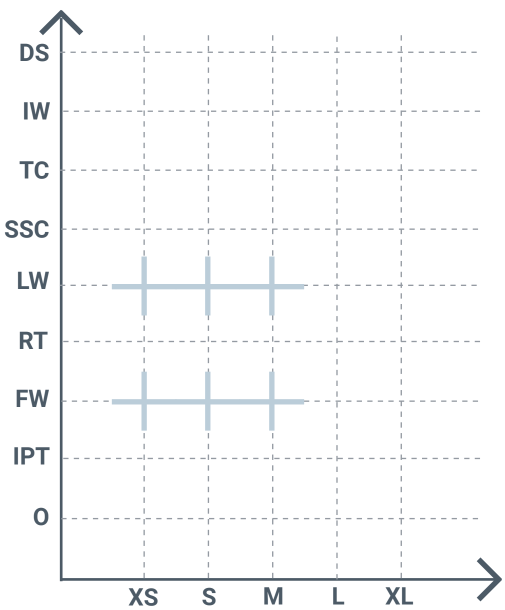
A teacher of the tool should have excellent knowledge in the recording, analysis and documentation of historic buildings. This knowledge is good to come both from the academic studies and from the applied work in corresponding projects. The recording of historic buildings (both before and after restoration) requires special knowledge and relevant experience, as there are many factors that can affect it. Similarly, the analysis of the original form is often a difficult and demanding task, which requires a combination of historical research, data analysis and critical interpretation of all elements. Therefore, the teacher should be able to impart the techniques of analysis of a historic building, on the one hand, and to develop an interest in the importance of having a detailed record of the condition of the building after the intervention. In the necessary field work, the teacher should be involved with the substance of the work and be able to analyze and explain the data on the spot.

## COURSE TYPE

- [ ] Design Studio (DS)
- [ ] Intensive Workshop (IW)
- [ ] Theory Course (TC)
- [ ] Seminar (short comprehensive) (SSC)
- [x] Laboratory work (LW)
- [ ] Research Thesis (RT)
- [x] Field work (FW)
- [ ] Internship Practical training (IPT)
- [ ] Other (O)

## SCALE

- [x] Construction Detailing and Interior Design Scale (XS)
- [x] Architecture: Buildings Scale (S)
- [x] Urban Design Scale (M)
- [ ] Urban and Regional Planning Scale (L)
- [ ] Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [ ] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [x] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [ ] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [x] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [x] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [ ] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- [ ] how the theories, practices and technologies of the arts influence architectural design;
- [ ] the creative application of the fine arts and their relevance and impact on architecture;
- [x] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- [ ] theories of urban design and the planning of communities;
- [ ] the influence of the design and development of cities, past and present on the contemporary built environment;
- [ ] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- □ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- □ principles associated with designing optimum visual, thermal and acoustic environments;
- □ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ■ understand the cost control mechanisms which operate during the development of a project;
- □ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Tool application:
- Kleious 24, House, Thessaloniki, Greece

Authors:
- Maria Dousi, Michael Nomikos

Year of the application:
- 2013-2014

The case of the house in Thessaloniki "Kleious 24" is a typical example of the usefulness of the tool. The study began with the recording of the existing condition, from which it was determined which parts of the building are authentic (of the original construction) and which parts are newer and incompatible. The proposal was based on the results of this initial recording, as it led to the restoration and energy upgrade of the original building and the demolition of the incompatible parts. In addition, thanks to the detailed recording of the structural characteristics of the building, it was possible to propose the installation of appropriate thermal insulation, which led to the improvement of energy behavior. The update of the plans after the restoration of the building, which incorporated the small changes that resulted from the construction site, recorded its new condition in detail, helping future interventions or solving any problems.

Figure 1. Drawings of the analysis and documentation of the historic building.


Figure 2. Drawings of the analysis and documentation of the historic building.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Aleksandra Đorđević

04/19

**tools**

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# SPACE SYNTAX

*простoрна синтакса • Space Syntax • Συντακτικό του Χώρου • Sintaxis del Espacio*

## GENERAL DEFINITION/ EXPLANATION

The **Space syntax** emerged in mid 1980s both as a theory of spatial and social systems and method that allows the research of these phenomena offering an understanding of the built environment and social processes. The term refers to the space as a system of syntactic relations, and syntax as a set of rules that determines the way certain elements are composed. It was conceived by Bill Hillier, Julienne Hanson, and members of The Bartlett, University College London. The method is used to decode functionality and structure of the space and to analyze real situations,  aiming to answer questions on how and why societies create different spatial organizations / patterns. It enables comparative analysis of buildings and settlements across both space and time, and hence it can be valuable for understanding and demystifying complex layers of historical morphology important for urban design decisions. In education, it offers an evidence-based approach and foundation of the analytical thinking.  **Space syntax** method has been used for research in architecture, urban design, urban planning, transport, while recenly it becomes relevant as well to archaeology, information technology, urban and human geography, and anthropology.

# WHAT?

## CONTENT

Having in mind the duality of the **Space Syntax** (a theory and a method), the concept note on the content needs to reflect on three parts:
(1) Theoretical grounding: Understanding central ideas of the theory of **space syntax** and developing a full theoretical account for how the buildings and settlements we construct are not merely the product of social processes, but also play a role in producing social forms.
(2) Building specialist ICT skills: applying analytical techniques of spatial modelling and observing human behaviour to construct an evidence-based understanding of the built environment.
(3) Critical assessing and interpreting the data in the light of other sources and contextual knowledge, providing quantitative and visual descriptions of real case examples.

The course should be concerned with examples of cities/sites/buildings with cultural and historical importance, applying on site and software analysis as a permeating activity during the course, and providing sustainable design solutions based on reflecting thinking.

# HOW?

## METHODS

The general teaching style should be through action learning and problem based approach. Following previously defined concept note, (1) theoretical grounding should be achieved by critical thinking in a knowledge centered environment (labs, research centers), (2) building specialist ICT skills through the application of **Space syntax** model (fundamental **space syntax** techniques and software, such as convex space analysis, axial or segment-angular spatial network analysis, Visual Graph Analysis (VGA used for the analysis of Integration, Choice and Depth Distance)) but also other complementary technologies such as Geographical Information System (GIS), statistical analysis, behavioural observation techniques and spatio-cognitive analysis, for which interdisciplinary perspective is needed, and (3) analytical phase of the collected data, and providing design solutions and reflections.

The important learning environment should be community cantered since the field research needs to be to analyse pedestrian movement at different times of the day and deploy hand-drawing and hand-calculations. Following the IO2 results, the teaching of **Space Syntax** will significantly improve analytical tools and methods that were ranked bellow average.

# WHY?

## GOALS

The main goals are concerned with tracing effects of the layout geometry, understanding behaviour and movement patterns in existing heritages cities, sites and buildings, understanding the interdependence between movement and spatial morphology, and providing comprehension of the evolution of settlement morphologies and changes that occurred.

The quantitative descriptions (visual and numerical) of urban street networks derived from **space syntax** analysis, can be used for formulating and testing "hypotheses about patterns of urban movement, encounter and socio-economic activity in the past, that can help in the interpretation of other historical source materials to give an overall account of urban spatial culture (Griffiths, 2020)."

The areas to be tackled while teaching on **space syntax** in relation to heritage and sustainability are urban patterns (Notions), Urban Heritage, Heritage sites, Documentary heritage (Heritage types), Heritage Reprogramming, Design for all in Cultural Heritage (Design approaches), Regeneration (Actions) and Morphogenesis study, Use of GIS Technology (Tools).

## TEACHERS' COMPETENCIES

General competences:
- possessing a specialist knowledge of theories of territoriality, territory theory, urban morphology, urban semiology, and **space syntax**
- participating in professional development and growth activities;
- developing professional relationships and networks with research labs and institutions

Pedagogical skills, comprising the following:
- teaching on real life examples, developing critical thinking and problem solving approaches
- empowering reflective practice approach and individual research to expand their knowledge
- Inspiring creativity, critical thinking and experimentation.

o implementing of new methods and techniques into educational activities;

Technological skills, comprising the following:
- using and applying **Space Syntax** method by integrating technology into their instruction to maximize student learning. (e.g. DepthmapX software, Qgis - SSx Toolkit)

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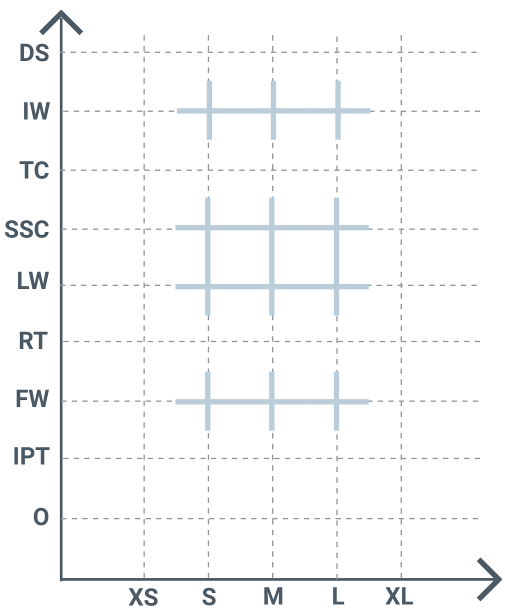


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- [ ] the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- [ ] the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH


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## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE - URBAN SCALE

Tool application:
- Urban scale: Trafalgar Square

Authors:
- Project Director: Tim Stonor, Partners: Foster and Partners, Halcrow Fox, Civic Design Partnership, Davis Langdon and Everest

Year of the application:
- 1996-98

Space Syntax was used for the analysis of pedestrian activity patterns (residents and tourists), diagnosing moving problems and providing framework and evidence-based argumentation for design solution. The space syntax approach (spatial accessibility analysis, pedestrian movement traces and stationary activities) provided adequate treatment of the Trafalgar Square and Parliament Squares, marked as places of supreme historical importance that were perceived as unsafe, unpleasant and traffic oriented. Trafalgar Square was completed in 2003, recording the increase of pedestrian movement by thirteen times.

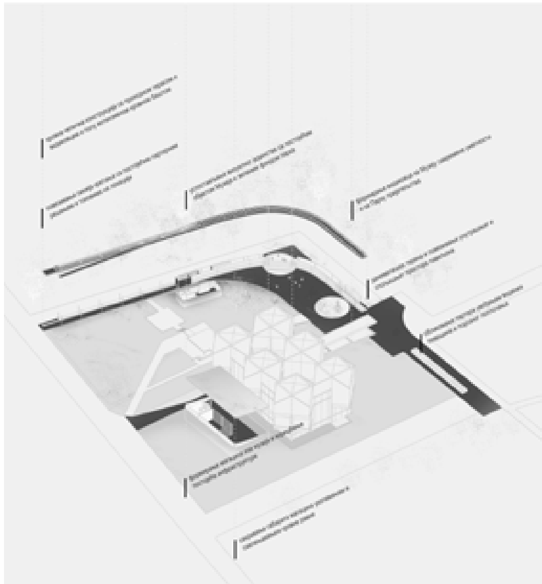
More at: https://spacesyntax.com/project/trafalgar-square/

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE - BUILDING SCALE

Tool application:
- Competition entry: Pavillion of the Museum of Contemporary art in Belgrade, Serbia

Authors:
- Petougao (M.Kostić, A.Zorić, A.Đorđević), Dejan Todorović and Irina Živković

Year of the application:
- 2021



Space Syntax was used for diagnosing connectivity problems and providing framework and visibility analysis as an evidence-based argumentation for the placement and shape of the pavillion.

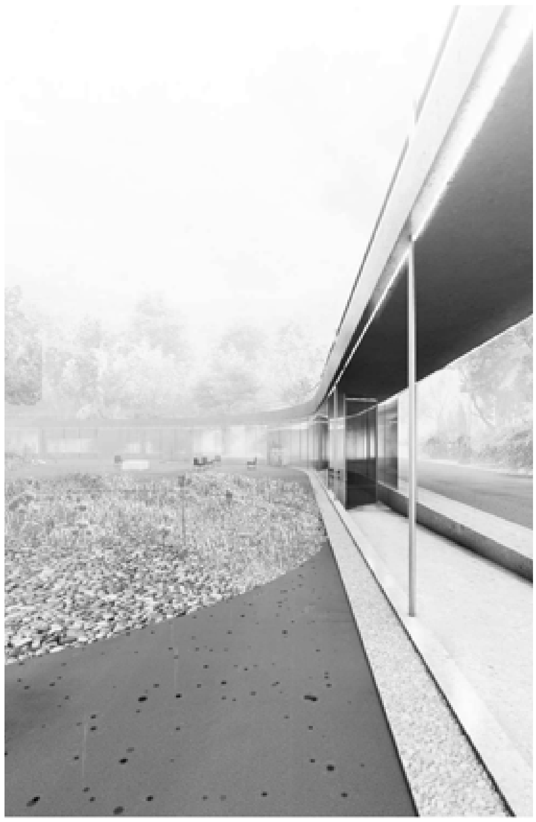



Figure 1. Space Syntax analysis and proposed solution of the Pavillion of the Museum of Contemporary Art, Belgrade

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Aleksandra Đorđević

05/19

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# MORPHOGENESIS STUDY

*студије морфогенезе • Morphogenesis study • Μελέτες Μορφογένεσης • Estudio de Morfogénesis*

## GENERAL DEFINITION/ EXPLANATION

The **Morphogenesis** term originates from the Greek morphê meaning shape and genesis meaning creation, and can be defined as the 'creation and subsequent transformation of urban form' (Vance 1977, 37)The morphogenetic approach is primarily used in the field of urban morphology, specifically within historico-geographical school. It was mainly researched and applied by M.R.G. Conzen and his successors who formed Urban Morphology Research Group in Birmingham, UK. In the domain of urbanism and architecture, it refers to the analysis of continual and perpetual historical process in which urban tissue is observed both at the time of their emergence and during the development and transformation in time (Djokić, 2009), hence contributing to the preservation of relationship between people and place through morphogenetic imprint as the basis for planning and design decisions. From the perspective of heritage and sustainability, the importance of the approach emerges from its focus on changes of the built environment, but taking into consideration the changes of the function and to the identity of the environment, and socio-economic and socio-political conditions that triggered changes.

# WHAT?
## CONTENT

**Morphogenesis** must be considered within the course having in mind the unbreakable connection with urban morphology as a research field. Consequently, the concept note of the course needs to reflect on three parts:
(1) Theoretical grounding: Understanding central ideas and concepts within urban morphology, followed by an understanding of the reasons for its application in the context of heritage and sustainability
(2) Analytical assessment: applying morphogenetic approach on a specific study area, and presenting, comparing and interpreting research findings
(3) Design process: applying gained knowledge to inform design process and guide decisions making process in context of urban planning.

The course should be concerned built along seven intertwined axioms and principles articulated by M.R.G. Conzen that create a framework for morphological concepts, summarized as (1) townscapes are historically stratified, (2) the period specificity of urban forms, (3) secular socio-political conditioning, (4) systematic townscape composition, (5) hierarchical nesting of form complexes, (6) systematically differentiated persistence of forms, and (7) morphogenetic priority of forms (Conzen, M.P., 2018).

# HOW?
## METHODS

The general teaching style should cover (1) holding ex cathedra lessons on urban morphology: essays, presentations, (2) collecting (archival research and on site research) and analysing urban transformation from the time of emergence to the present state: graphical representation of **morphogenesis** either in parallel, by placing the maps in chronological order next to each other or by overlapping them so that changes are perceivable (Milojević, Đokić, Pešić, 2021), (3) conducting comparative analysis (plenary discussions, debates) of different stages of **morphogenesis** regarding change intensity (quantitative or qualitative), historical milestones, and detecting possible reasons for the changes (socio-economic and socio-political) that are manifested in change of morphological characteristics (ibid), (4) applying gained knowledge in design process perceivable in street, block, plot and building pattern and position, shape, size, function.

Following the IO2 results, the teaching of **Morphogenesis** as a integral part of Urban morphology will significantly improve analytical tools and methods for securing sustainable use of heritage that were ranked bellow average.

# WHY?

## GOALS

The main reasons for teaching and applying morphogenetic approach as a part of urban morphology can be seen in (1) revealing order within the apparent complexity of urban form and hence advance the practice of urban design (Kropf, 2011), (2) describing and explaining the dynamics of urban form in an accurate way (Oliveira, 2021), (3) understanding and presenting changes of urban form and transformation processes in different historical periods (Đokić, 2009) (4) forming a connection with history in order to determine what is important for the present (Sanders, 2016), (5) establishing a connection with a place through an interpretation of the history of a site revealed by its detailed built form patterns (ibid), and (6) adding value to the design and place making aspect (Davies in Sanders, 2016).

Following this line of reasoning, **morphogenesis** is an important tool for establishing value framework for the design process, and as such it is important for securing sustainable use of heritage. The areas to be tackled while teaching on space syntax in relation to heritage and sustainability are Cultural identity, urban patterns (Notions), Urban Heritage, Documentary heritage (Heritage types), Community Building and Representation, Historical Urban Landscapes (Design approaches), Restoration, Conservation (Actions) and Mapping, Documenting and Cataloguing Use of GIS Technology (Tools).

## TEACHERS' COMPETENCIES

General competences:
- possessing a specialist knowledge of urban morphology schools, tools and techniques, as well as an

appropriate background in planning and architectural history, and social and economic history

- developing professional relationships and networks with research labs and institutions

Pedagogical skills, comprising the following:
- understanding need for way and manner how city has formed, developed and changed over time

- teaching on real life examples, developing critical thinking and problem solving approaches

- empowering morphogenetic approach as an integral part of design studio
- Inspiring creativity, critical thinking and experimentation.

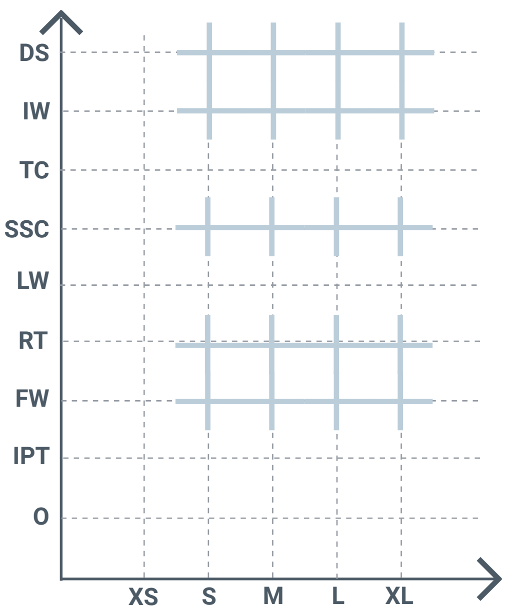
- encouraging archival research and site visits

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- □ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- □ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- □ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ☐ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Tool application:

- The House in the Rua do Lindo Vale, Porto

Authors:

- Ana Cláudia Monteiro and Vítor Oliveira

Year of the application:

- 2010

A characteristic example of applying morphogenesis as an integral process of design is The House in the Rua do Lindo Vale,. It establishes the relationship between the landscape and the individual building, looking at the structural elements of the street, plot and building level as significant parts of heritage. The sustainability of the solution is observed through the author's endeavour to answer the questions "how to recover the physical relation between the past, present and the future" through the design process.

Figure 1. Rua do Lindo Vale in 2020: streets, plots and block-plans of buildings
*Copyright: (Oliveira and Monteiro, 2021)*

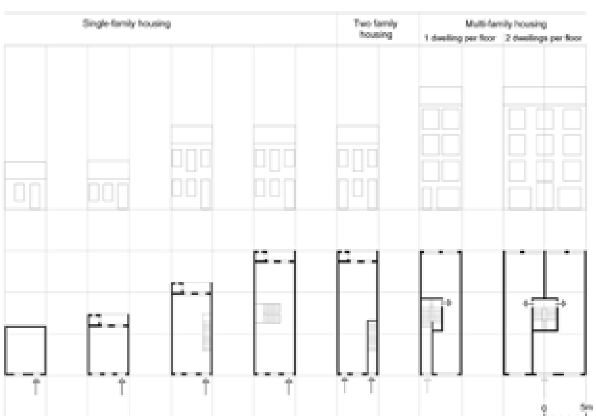



Figure 2. A simplified typological process of Lindo Vale' buildings
*Copyright: (Oliveira and Monteiro, 2021)*

Figure 3. House— rear façade
*Copyright: Photographs by José Campos*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH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For more about built project - The HOuse in the Rua do Lindo Vaale, Porto:

https://vitoroliveira.fe.up.pt/pdf/clv.pdf

https://www.archdaily.com/604697/urban-house-in-tua-do-lindo-vale-ana-claudia-monteiro-vitor-oliveira?ad_medium=office_landing&ad_name=article

USE

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José M. Aladro Prieto

06/19

**tools**

statements

# MAPPING, DOCUMENTING, CATALOGUING

*мапирање, документовање и каталогизација • Mappare, Documentare e Catalogare • Χαρτογράφηση / Τεκμηρίωση / Καταλογράφηση • Mapeo, Documentación y Catalogación*

## GENERAL DEFINITION/ EXPLANATION

The **cataloguing** of a Cultural Asset "is the first driving force of every action of protection" (Román Fernández-Baca, 1996).

The primal action of protection and therefore of safeguarding. **Cataloguing** necessarily includes documentation as well as geographic and cartographic identification of the asset.

A catalogue is "an organized list in which books, documents, people, objects… that are interrelated, are included or described individually" (RAE Dictionary, 2020). Including a Cultural Asset in a catalogue implies its identification as an asset in the first place. That gives it visibility socially, enables public recognition of its heritage dimension and must involve its dissemination.

**Cataloguing** requires documenting, deepening the knowledge of the Asset. The documents must be scientific and aimed to the determination of its heritage values. Heritage characterizing is the main objective of the catalogue. A process that is open and gets feedback from the rest of actions of heritage management.

Characterization integrates the different scales in which the asset stablishes interactions, from the object to the landscape, immaterial and physical. This wide and complex interrelations is where sustainability and built heritage must get together.

# WHAT?

## CONTENT

Within the learning process, **cataloguing** a cultural asset, mainly architectonical or urban, permits to recognize its complexity, its multiple interpretations and perspectives, both material and immaterial. It forces to assume and identify the different scales of their heritage values, from the object to the landscape, urban or territory.

Documenting of the asset is an essential step for its characterization. The exercise of documenting (cartographical, historical, ethnological, etc.) confront us with the necessity of the interdisciplinary encounter in definition and assessment. It also makes it possible to recognize how heritage action has redefined architectonical practice. The establishment of heritage values requires to transcend discipline and meet the expectations or stances of society regarding the Cultural Asset. It forces to face complex social and media contexts and to understand the importance of citizen participation in the processes of heritage characterization.

Cataloguing requires the establishment of protection prescriptions, also upon the materiality of the heritage element. These prescriptions establish necessary relations with architectonical and urban sustainability through measures of rehabilitation, urban recycling or new functions and uses.

# HOW?

## METHODS

The teaching methodology has to be based on team work to solve complex problems. Problems whose formulation confronts the student with a real, proximate and apprehensible situation. A situation that permits to address the Cultural Asset from an integrate heritage perspective and in multiple scales.

Learning about real “objects”, partially or totally studied, requires a critical stance in the face of heritage considerations stablished before, sometimes widely consolidated. Critical analysis must relocate heritage characterization within current society, from a wide interdisciplinary perspective that will also have to incorporate sustainability requirements regarding built heritage.

Two activities related to an architectonical Cultural Asset are proposed:
1. Definition of the contextual “urban landscape” of the asset. Integrating the different scales and factors that build the mentioned “landscape”:  the urban or territorial base, the activities that have place on it and people perceptions of it.
2. Development of an “extended” catalogue Sheet. Assuming the approaches described before in the Content section. Both activities will be based on the previous documentation of the asset from the different perspectives mentioned.

# WHY?

## GOALS

During the learning process, the student must achieve:

- Comprehension of the complexity of built reality, of the multiple layers and scales that affect architectonical and urban heritage, and how they are incorporated in its integral heritage characterization.

- Comprehension of the existing interrelation between cultural heritage and sustainability concepts related to built reality in current society.

- Knowledge and validity of cataloguing tools. Their open condition, extent and interrelation with the rest of the actions in protection process.

- The importance of knowledge as a base for assessment, cataloguing and heritage protection. Knowledge that has to be achieved through interdisciplinary, focused, scientific and technical documentation.

- The recognition of the architectonical activity evolution and the social requirement of scientific and interdisciplinary cataloguing and heritage protection.

-The importance and necessity of incorporating citizen stances in the process of heritage characterization, cataloguing and protection.

## TEACHERS' COMPETENCIES

- Ability to comprehend and interpret architectonic and urban heritage according to the contemporary notion of Cultural Asset. Meeting the recent evolution of the notion of heritage from the consolidation of the concept of cultural landscape.

- Knowledge and ability of critical analysis to recognize and interpret architectonic, urban and artistic production of the different periods of art history.

- Ability to integrate heritage awareness and sustainable perspective in the interpretation of architectonic action, human settlements and intervention in territory.

- Teacher as reflexive agent capable of confronting the student with present currents of thought that affect heritage notion in general and cataloguing in particular.

- Expert teacher that had participated in cataloguing activities, with knowledge about the legal and social context in which heritage management develops in contemporary reality.

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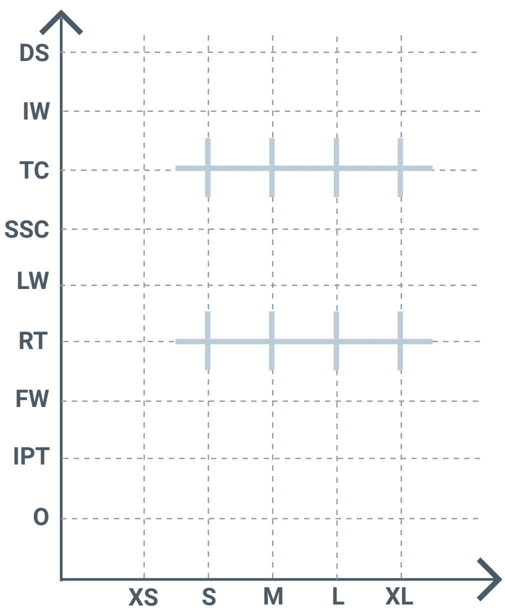


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- [ ] the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Tool application:
- Cataloguing project in Andalusia

Authors:
- Regional government of Andalusia

Year of the application:
- 1991-2002

Cortijos, haciendas y lagares. Arquitectura de las grandes explotaciones agrarias en Andalucía" ("Cottages, farms and presses. Architecture of the great agricultural exploitations in Andalusia") is a relevant cataloguing example developed by the regional government of Andalusia (Junta de Andalucía). A cataloguing project and editorial dissemination, with more than 10 published volumes, that have given visibility to this not very well known architectonical set, partially at risk of disappearance, with relevant architectonic, ethnologic and landscape heritage connotations. Its development has enabled its inclusion in urban catalogues of municipalities.

Vernacular architecture, strongly rooted in territory. Expression of traditional building and exploitation systems, and of the preindustrial relation between people and territory. It is also an important reference for the study of sustainable systems and buildings adapted to the natural environment.

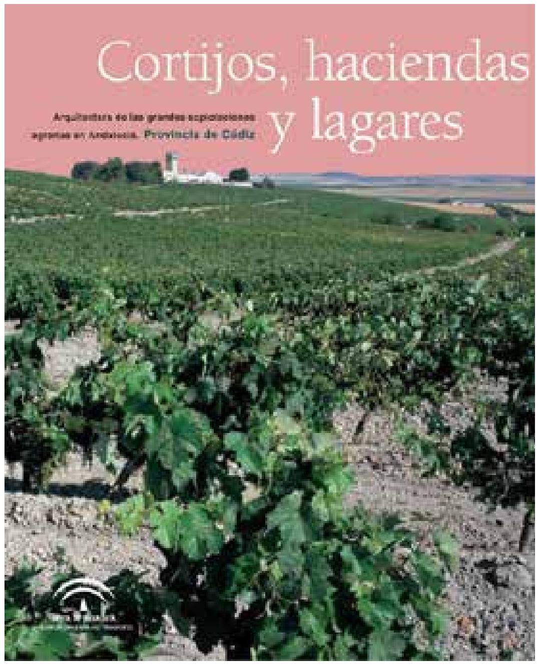


Figure 1 . Front cover of the volumes dedicated to the provinces of Cádiz (2002) ) of "Cortijos, haciendas y lagares. Arquitectura de las grandes explotaciones agrarias en Andalucía". Sevilla: Junta de Andalucía
*Copyright: Ministry of Housing and territorial planning, Andalusian Government (Consejería de Vivienda y Ordenación del territorio, Junta de Andalucía)*


Figure 2 . Interface Heritage database RAAC Registro Andaluz de Arquitectura Contemporánea (Andalusian Registry of Contemporary Architecture and Contemporary Urban and Architectural heritage research group, Seville University (2004-2008) Andalusian Historical Heritage Institute, Ministry of Culture, Andalusian Government (IAPH Instituto Andaluz de Patrimonio Histórico, Consejería de Cultura, Junta de Andalucía)

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USE

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Roberto Alonso-Jiménez

07/19

**tools**

statements

# USE OF GIS TECHNOLOGY

*употреба ГИС технологије • Impiego delle tecnologie GIS • Χρήση Γεωγραφικών Πληροφοριακών Συστημάτων • Uso de tecnología SIG*

## GENERAL DEFINITION/ EXPLANATION

**Geographical Information System** (GIS) are a computer-based set of tools that work with georeferenced data using spatial or geographic coordinates (geodata) with practical purpose. Developed from the evolution of different software such as Databases Manager System (DMS), Computer-Aided Design (CAD), and image processing **GIS** works as a database where geometry and geographical representation associated to spatial data. From its beginning in 1960 the use of **GIS** focus in the environmental management and end up broadening to other fields with special implication in heritage. The use of **GIS** is spread around different field like surveying of environmental risk, climate monitoring, elaboration of maps and cartography or territorial analysis. Focusing on heritage and sustainability the construction of Spatial Data Infrastructure (SDI) stands out like the main tool where public and private institution promote the inclusion of different data at national and international level. The use of **GIS** in this field constitutes a net where tools, software and information are meshed and allow both professional and student to create, manage, analyse, and query any works around all types of spatial data.

# WHAT?

## CONTENT

The broad range of project that applied **GIS** and even the requirements of institution to submit georeferenced information prove the relevance that this tool has acquired. Use of **GIS** and concretely construction of SDI is a consolidated trend, framed in the case of Europe by INSPIRE, this situation underwrites the significance of this field. In this frame, **GIS** stand out as the main method to manage information in territorial and urban planning and because of that a key instrument to interdisciplinary and multiscale work. **GIS** are consolidated as one of the main computer-based tools related to Built Environment and because of that from other technologies like Heritage Building Information Modelling (HBIM) and Heritage Data Bases exist proposals of a joint workflow. To acquire the skills linked to **GIS** a dual approach is needed, first a core knowledge and basic skills and later a rising use of the tool through the curriculum. Strengthen the learning process of **GIS** support the students to address: information management, analyse of spatial information, work with graphical material, acknowledge the spatial dimension of heritage…

# HOW?

## METHODS

The appropriate teaching strategy is one in which the student is the main character of the learning process, where in addition to acquiring responsibilities and critically approaching the contents provided in the subject, he/she exchanges points of view and experiences with his/her classmates. The use of **GIS** allows the promotion of different methods that combine: Problem-Based Learning (PBL), Service Learning (SL), Cooperative Learning (CL), lectures / expository method and case studies. The learning of this programme is proposed in this framework, which is the result of combining different methodological strategies, each one is chosen according to the contents, teaching objectives and competencies to be developed. They are given various training activities, combining individual work with group work, using international examples but also local examples close to their real context.

Understanding **GIS** like an applied tools its learning should be engaged within the methods that could simplify address this interdisciplinary tool. In this line, learning could focus on documentary management, interpretation and analysis of geodata, development of cartography from new and existing data and interdisciplinary workflows.

# WHY?

## GOALS

Through the study and use of this tool, students learn the potential and applications of geodata to analyse and work with heritage and sustainability in different scales. The study of heritage environment with **GIS** allow student to merge different source of information from the institutional and historic to the social participation and work it jointly. Using different methods of heritage study that share **GIS** as main tool, especially those supported in landscape, students will be able to structure and apply the theoretical, critical and instrumental elements of the preliminary studies necessary for heritage interventions. In addition, students will become aware that heritage and culture are current resources that contribute to local development and the local economy, and are therefore considered key elements of urban, economic and social sustainability.

Use of **GIS** is perfectly associated with some key concepts in the learning/ teaching process: cultural complexity and interdisciplinarity, the multi-scale condition of the city, sustainable urban development; heritage as an element for urban regeneration, heritage and new technologies or the binomial creativity and scientific methods.

## TEACHERS' COMPETENCIES

To address the transference of knowledge in **GIS** use the teachers must have multiple profiles from expert in application of this tools to other expert in heritage and sustainability that works with this system.

To undertake this process teachers should:
- Have expert knowledge of the tool
- Show him/herself as lifelong learner
- Know the use and application of IT in this filed
- Address problems in creative and innovative ways
- Encourage reflection and critical thinking
- Organize and develop collaborative work
- Support student as classroom actor and providing tools and knowledge
- Understood the complex reality of the actual conception of heritage
- Address issues with an interdisciplinary approach
- Be respectful, educated, inclusive, proactive, and communicative
- Be capable to organize y manage works and students

## COURSE TYPE

- [x] Design Studio (DS)
- [x] Intensive Workshop (IW)
- [x] Theory Course (TC)
- [ ] Seminar (short comprehensive) (SSC)
- [ ] Laboratory work (LW)
- [x] Research Thesis (RT)
- [x] Field work (FW)
- [ ] Internship Practical training (IPT)
- [ ] Other (O)

## SCALE

- [ ] Construction Detailing and Interior Design Scale (XS)
- [x] Architecture: Buildings Scale (S)
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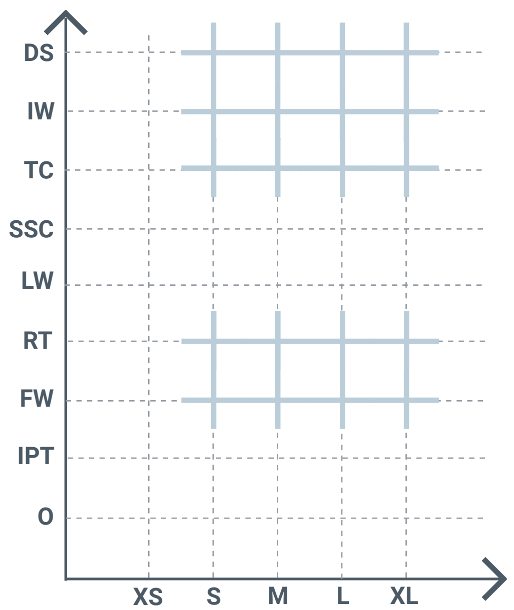


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [ ] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [x] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [ ] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [ ] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [x] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [ ] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- [x] how the theories, practices and technologies of the arts influence architectural design;
- [x] the creative application of the fine arts and their relevance and impact on architecture;
- [ ] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- [ ] theories of urban design and the planning of communities;
- [x] the influence of the design and development of cities, past and present on the contemporary built environment;
- [ ] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ■ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Tool application:
- N-340 roadway corridor project

Authors:
- Mar Loren Méndez - Principal researcher

Year of the application:
- 2013-2015

The project developed the first online geo-spatial Cultural Heritage Data Base (CHDB) applied to historical roadway corridors, with the N-340 national road serving as a case study. Reflecting the current openness in the field of heritage studies, the research proposes an interdisciplinary approach that reframes CHDB, both conceptually and technologically. Accessibility, flexibility, and ease of use do not preclude rigor: the data base works in conjunction with a GIS (Geographic Information System) support system, substantiated by a bibliographical archive. A hierarchical multi-scalar heritage characterization has been implemented to include a range of territorial scales and to facilitate the creation of itineraries

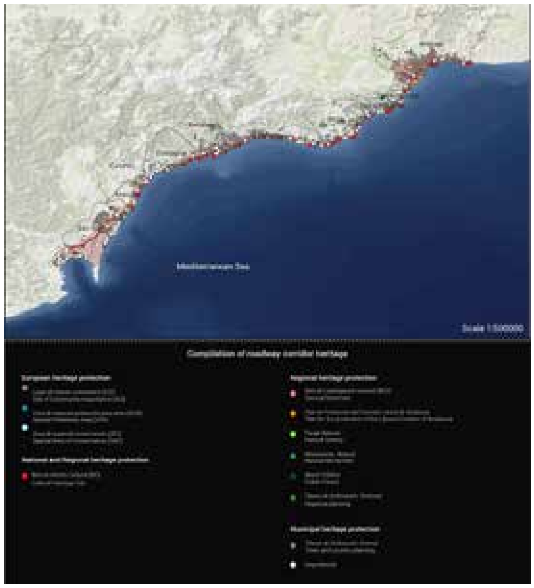

Figure 1. Compilation of the heritage assets of the corridor. European, national, regional, and local heritage protection. Research results inserted into: IECA Topographical Map of Andalusia scale 1:400.000, 2008.



Figure 2. Existence of heritage assets in the corridor prior to motorized traffic. Restored watchtower, Salto La Mora, Casares (Malaga) and military quarters of the 'carabineros,' Guadalquitón Dunes, San Roque (Cádiz) April 2015. N-340 Research Team.



Figure 2. Analysis of human activity in the corridor. Snapshot of corridor heritage prior to motorized traffic. National Topographic Map produced by the German Army, detail of sheet 1072, scale 1:50.000, first edition, 1916 in National Geographic Institute (IGN), Ministry of Development, Government of Spain.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Gianluca Spironelli

08/19

**tools**

statements

# HISTORIC BUILDING INFORMATION MODELLING HBIM

*информационо моделовање историјских објеката • Historic Building Information Modelling - HBIM • Μοντέλο Δομικών Πληροφοριών για Ιστορικά Σύνολα και Κτίρια - HBIM • Historic Building Information Modelling - HBIM*

## GENERAL DEFINITION/ EXPLANATION

**HBIM (Heritage Building Information Modeling)** is a management tool that involves multiple disciplines and indicates the BIM (Building Information Modeling) methodology applied to the cultural heritage. It's the holistic result of digitising the process involved in managing information related to the existing buildings and consists in a 3D model associated with specific informative attributes. Each object of an **HBIM** model represents a building element related to specific data and has a close relationship with the others to allow dynamic editing and status changes. The properties data related to the geometries identify the behaviour of the building element and ensure interoperable access and collaboration between the different actors involved. **HBIM** model integrates geometric models and multidisciplinary structured data to create a digital representation of an architecture throughout its life cycle. The data association possibilities are many: they can relate physical dimension, conservation status, function, surveys, materials attribute, phases status, cost, historical data, vulnerability, etc.

## WHAT?
### CONTENT

The value of the **HBIM** methodology resides in the possibility to create and relate geometrically accurate models with specifics information (data) and in the opportunity to activate multidisciplinary collaboration activities. In the processes of conservation and valorisation, in-depth knowledge and documentation of the materials and construction techniques involve interdisciplinary areas. Effectively organising them in a system that regulates their collection, cataloguing, processing and archiving according to shared procedures becomes a fundamental prerequisite for asset management and valorisation strategies. All the tools that make it possible to collect data and reach deep knowledge of the object become indispensable. Data digitisation plays a fundamental role in the range of application possibilities, from the survey to the mechanisms for conserving and managing cultural heritage.

## HOW?
### METHODS

The teaching philosophy related to **HBIM** should be based on an interdisciplinary approach that stimulates the student's capability to develop critical and theoretical components considering tangible and intangible value associated with the Cultural Heritage and Sustainability.

Teaching activities should include ex-cathedra lectures, design studio courses or workshop activities composed by teachers and assistants from each subject area and a coordinator or supervisor responsible for collaborative work. Mastering **HBIM** concepts involves transdisciplinary capabilities:

Ex-cathedra lessons should focus on the theoretical aspect through critical analysis and interpretation of international theoretical frameworks to achieve critical awareness, analytical and planning tools necessary to deal with the theoretical frame of the discipline.

Practical workshops should give the students the ability to describe and analyze the building from a technical point of view guiding the student with the most appropriate tools. Teaching resources should be based on the OpenBim standards and the IFC (Industry Foundation Classes) schema.

Seminars should allow in-depth analysis on a specific theme and stimulate the active participation of students with discussion and critics of emblematic case studies with experts.

# WHY?

## GOALS

The increasing knowledge and specialization of professions involved a fragmentation of the data associated with constructions and, in particular, in managing and valorize Cultural Heritage. Digitalization of data and processes in network systems based on national requirements and standards can increase data accessibility and conservation strategy development. The BIM methodology does not replace professional competencies but allows different levels of access to information. This is immediately associated with the need to establish common languages and processes using informative digital models to enable data exchange and a collaborative work environment.

## TEACHERS' COMPETENCIES

Teaching experiences that involve the **HBIM** process are new and related to the continuous development of the pedagogical culture. In teaching **HBIM** methodology, the teacher must not be seen only as an IT expert but must be a figure capable of relating complex multidisciplinary areas through IT tools. One of the main topics introduced by the **HBIM** process is interdisciplinary collaboration and integration between different subject areas; in this sense, the teacher must focus on managing the process and not only on geometric modelling or data creation. Teaching the **HBIM** process requires Knowledge of the theoretical and technological aspects of BIM and theoretical and management experience in the field of Cultural Heritage. Students have a different level of Knowledge about informatics technologies and differ in their culture; from this point of view, teaching **HBIM** methodology has to be implemented at different levels on the student's curriculum, identifying strategies and aims that depend on specific competencies.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
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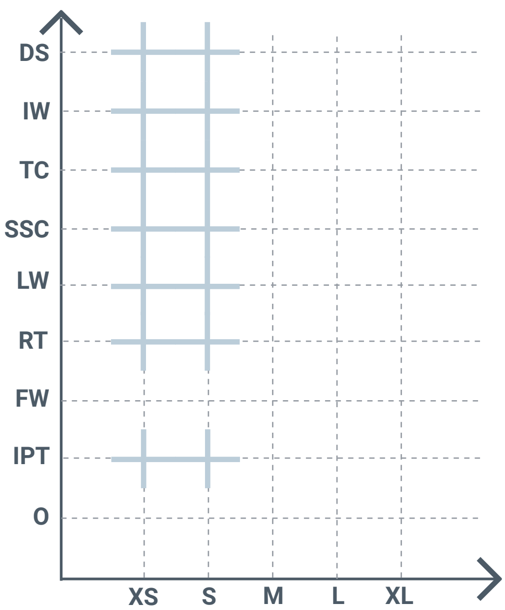


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
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- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

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- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

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- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
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**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
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- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
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- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Model project title and location:
- "Unfinished" church of Brendola. Vicenza, Italy

Authors of project:
- Fausto Franco

Year (period) of the project
- early thirties of the 20th century

Authors of model:
- Gianluca Spironelli

Year (period) of the model
- 2020-ongoing

The case study proposed is an ecclesiastical architecture designed by engineer-architect Fausto Franco in the early thirties of the twentieth century. During the middle age of the twentieth century's fifties, economic problems led to the interruption of the church's construction and left the church in an unfinished situation that today we recognize as a ruin. The church's study outlined the application of a methodology for studying and analyzing the cultural heritage based on data digitization and creation of a knowledge system that concerns the building's state of conservation. The research activity aimed to organize the collected data in an open repository linked to an interoperable HBIM model that could become a helpful digital tool to develop valorization strategies based on interoperability and the possibility to share the knowledge efficiently between the community and the actors involved in the conservation process.

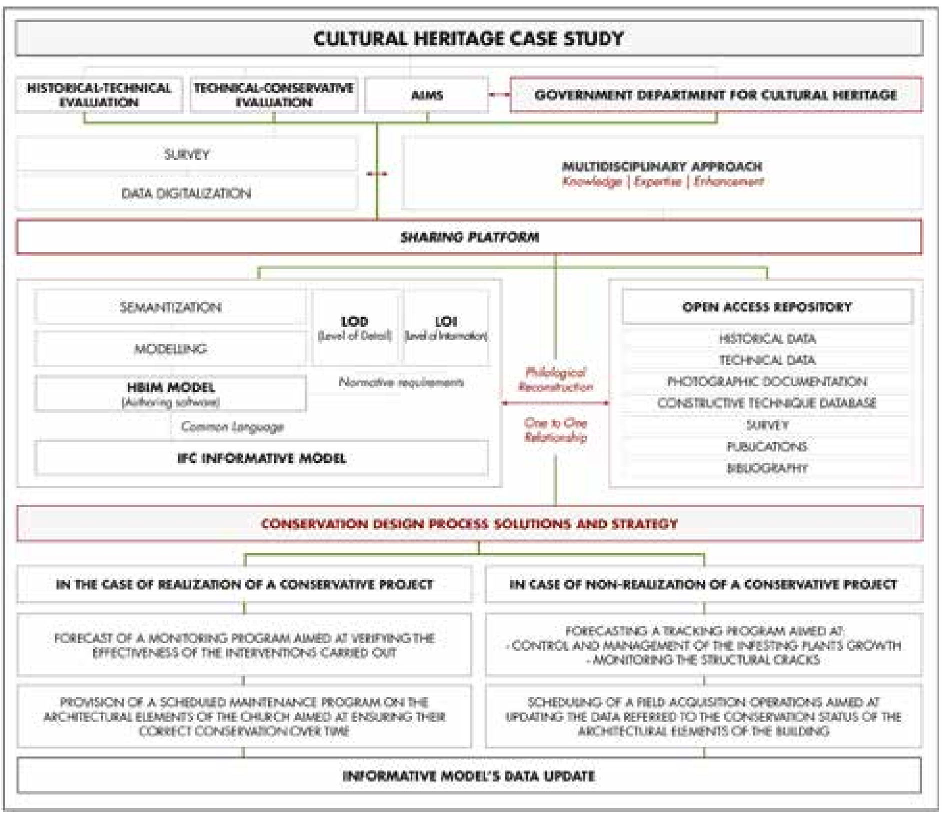


Figure 1. Scheme of the workflow proposal for the digital research activities on cultural heritage

*Source: Output of the research activity "Il limite della Rovina. Procedure di conoscenza, analisi e valutazione dello stato conservativo della Chiesa 'Incompiuta' di Brendola" (The Limit of the Ruin. Procedures of knowledge, analysis and evaluation of the state of conservation of the 'Unfinished' Church of Brendola), stipulated between the Università Iuav di Venezia and the Municipality of Brendola*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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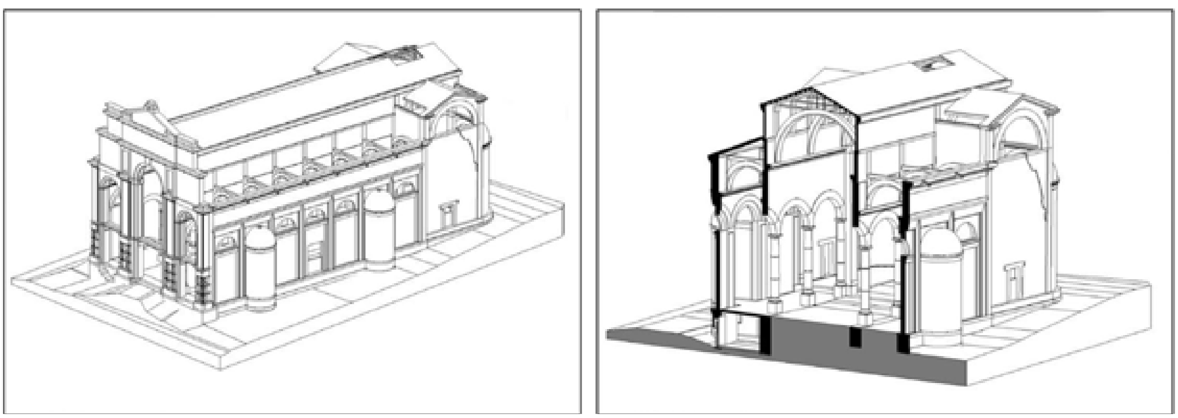

Figure 2. HBIM model of the church developed in Autodesk Revit software.
*Source: Output of the research activity "Il limite della Rovina. Procedure di conoscenza, analisi e valutazione dello stato conservativo della Chiesa 'Incompiuta' di Brendola" (The Limit of the Ruin. Procedures of knowledge, analysis and evaluation of the state of conservation of the 'Unfinished' Church of Brendola), stipulated between the Università Iuav di Venezia and the Municipality of Brendola*

Università Iuav
di Venezia

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Viviana Ferrario

09/19

**tools**

statements

# COLLABORATIVE CARTOGRAPHY

*колаборативна картографија • Cartografie partecipate •*
*Συνεργατική Χαρτογραφία • Cartografía Colaborativa*

## GENERAL DEFINITION/ EXPLANATION

**Collaborative cartography** is an emerging approach in map production, combining (web)GIS and user-generated content in a collective process in witch a group of individuals or entities contribute map elements to a common geographic information system.
Collaborative cartography, together with *participatory mapping and public participation GIS (PGIS)*, focuses on the importance of engaging community-centered processes of map production to raise people awareness and empower citizens in different fields of action, such as to take an active role in spatial and landscape planning (i.e. the so called "parish maps" or "community maps"), or to react to oppressive systems and design pathways for alternative futures, especially in developing countries and where indigenous cultures are in danger.
While participation is increasingly considered a key to success in many conservation related projects, potentialities of collaborative cartography in the field of heritage conservation do not seem to have been systematically explored yet. Collaborative cartography and participatory mapping can provide an especially effective method for a community to identify and communicate the resources and values they deem important, representing then an interesting perspective for heritage studies and for conservation policies and practices.

# WHAT?

## CONTENT

**Collaborative cartography** can be an affective tool in heritage conservation, providing a more accurate understanding of the needs of the community, an improved ability to adapt the project to meet local conditions, and an improved spirit of cooperation both within the community itself and between the community and outside stakeholders (La Frenniere, 2008). In an educational perspective, to engage effectively in collaborative cartography, students need to acquire competencies in cartography, history of cartography, GIS, critical GIS, participatory processes.

# HOW?

## METHODS

Once provided the basic systematic knowledge in cartography, history of cartography, GIS, critical GIS, participatory processes, students education in collaborative mapping needs a problem-based, information-oriented, and community-based teaching philosophy and learning environment. Students could be involved directly in research projects in fieldwork, both as mappers and as facilitators.

# WHY?

## GOALS

**Collaborative cartography** stays at the crisscross among different disciplines, but Human Geography and Spatial Planning can be the best disciplinary environments in witch this notion and tool can be learned.

## TEACHERS' COMPETENCIES

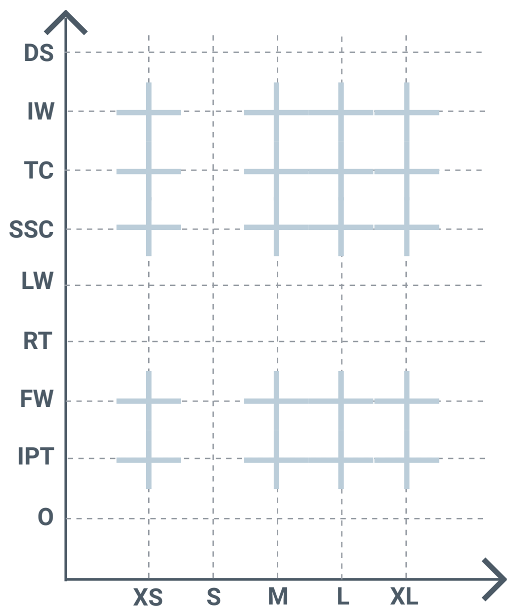
Among teacher's special competencies needed to effectively transmit competencies in **collaborative cartography,** both a deep practical knowledge in GIS and a critical approach to cartography is indispensable. The teacher should be at the same time a reflective agent, a skilful expert and a social agent, possibly involved in local development or awareness raising action research.

## COURSE TYPE

- ☐ Design Studio (DS)
- ☐ Intensive Workshop (IW)
- ☐ Theory Course (TC)
- ☐ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ☐ Research Thesis (RT)
- ☐ Field work (FW)
- ☐ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ☐ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ☐ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ☐ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ☐ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ☐ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ☐ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- ■ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ☐ the impact of buildings on the environment, and the precepts of sustainable design;
- ☐ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title:

- Collaborative cartography Berlin

Authors:

- Developed by Haus der Kulturen der Welt and Refugees on Rails, kindly supported by the Friends of Haus der Kulturen der Welt

Year:

- 2015/16 – on-going

Collaborative cartography is an important tool in Cultural Heritage and Sustainability approaches. We can find numerous research and social experiments, but different methods and approaches are not systematically explored. Significant case could be consider the Venice Openstreetmap ([https://www.openstreetmap.org/relation/44741#map=14/45.4392/12.3400&layers=N](https://www.openstreetmap.org/relation/44741#map=14/45.4392/12.3400&layers=N)) and the collaborative cartography in Berlin, by refugees: [https://arriving-in-berlin.de/](https://arriving-in-berlin.de/).

Collaborative mapping is increasingly integrated in cultural, social or commercial projects (some Italian examples: https://www.eumm-nord.it/site/mappiamo-milano_nord.html; http://www.zappataromana.net/mappa/; https://inloco.eu/opencall/)


Figure 1. The collaborative cartography in Berlin
*Source: https://arriving-in-berlin.de/about/*

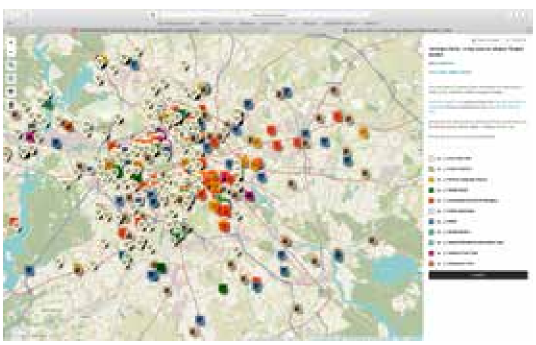

Figure 2.The collaborative cartography in Berlin
*Source: https://arriving-in-berlin.de/about/*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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USE

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Angel L. González Morales

# 10/19

**tools**

statements

# COLLABORATIVE WORKSHOP - CHARRETTE

*колаборативна радионица • Laboratorio integrato - CHARRETTE • Συνεργατικό, εντατικό εργαστήριο σχεδιασμού• Workshop Colaborativo*

## GENERAL DEFINITION/ EXPLANATION

This is an educational-participatory tool designed to generate MULTI-SCALE, MULTITEMPORARY proposals (focused on solving problems in the long term, but achievable in a short period of time) and in which MULTIAGENTS are included: educational (students and teachers a like), public institutions and citizenship. As its name indicates, two features will define this tool: 1) the construction of a work methodology and, above all, the construction of a link that allows the collaboration between actors: Professional, Educational, Practical but also Affectivly, among both the members of the working group and them and the place where it is carried out; and 2) the eminently practical character applicable to both, the analysis and the diagnosis, to the preparation work of the proposal and to the results of the initiative.

# WHAT?

## CONTENT

As opposed to the usual understanding of architecture and urbanism linked to a purely spatial vision of the places we inhabit, the main field of work in which this tool is defined and focuses is the study and development of the RELATIONSHIPS existing in such locations, being these: environmental, socio-cultural, political, but above all human, and, therefore, linked to an emotional and sentimental dimension.

Thus, from an educational perspective, its main feature will be the "experiential nature" of the learning-teaching process, as well as the empowerment of empathy and the personal involvement of all agents (whether they are teachers, students, technicians or citizens). This will lead to a redefinition of the concepts of heritage and sustainability, considering the first a crystallization in time of the experiences carried out by a society in a particular place, and the second -sustainability- as a reflection of an attitude normally attributed to a society, but which also is inevitably part of the individual scale, of the perception, interests and convictions of each individual (students, technicians or citizens).

# HOW?

## METHODS

Synthetically, we could say that the know-how of this tool will be based on two basic theoretical concepts: PROCESS and TIME. To the features described in the first section, two other features on which this educational- participative work methodology is based will be added:

1) The need to understand the educational activity as a process of knowledge (of the place, of the participants among themselves, of the students and the teachers, etc.), of the generation of a group as well as of the appropriation of the place on which the work is developed. As it has been clarified above, it will be fundamental to build a series of new relationships not only among the people who live in the work place, but also among the members who carry out the proposal.

2) The understanding and use of time as a fundamental part in the educational and human process. Time will therefore be analyzed and used as another dimension from which to generate proposals and work on, not only from an urban point of view, but above all from a human (and therefore educational) perspective. This is due to that these new relationships and the conformation of a sense of group and belonging should necessarily be based on common experiences, or in other words, on time shared by all the participants and actors involved.

For further information, see: https://demospaz.org/urbanismo-de-lo-posible-3/ and https://www.mdpi.com/2071-1050/11/15/4125.

# WHY?

## GOALS

Finally, it should be emphasized that this work methodology will have a fundamental objective and that is to work and, therefore, generate a link between PEOPLE and PLACES. Thus, to delve into the search and knowledge of these two spheres will be necessary.

This will lead to the use of dynamics and tools that generate and are based on data, and the observation from a quantitative, qualitative and spatial point of view. In other words, this stars from subjective aspects, such as the specific perception of inhabitants, students and teachers, towards a more objective and quantifiable aspects such as environmental, cultural or historical features, linking all of them to a given spatial reality (materiality, scale, qualities, etc.).

## TEACHERS' COMPETENCIES

There will be several skills that professors will have to have and at the same time transmit to students. Beyond the technical skills related to architecture and urban planning, heritage and sustainability, both teachers and students will have to put into practice the following 5 skills:

- The critical and dialogic ability.

- The aptitude to mediate and not impose ideas.

- Participant observation.

- Empowerment and use of creativity and freedom.

- Empathy and humility.

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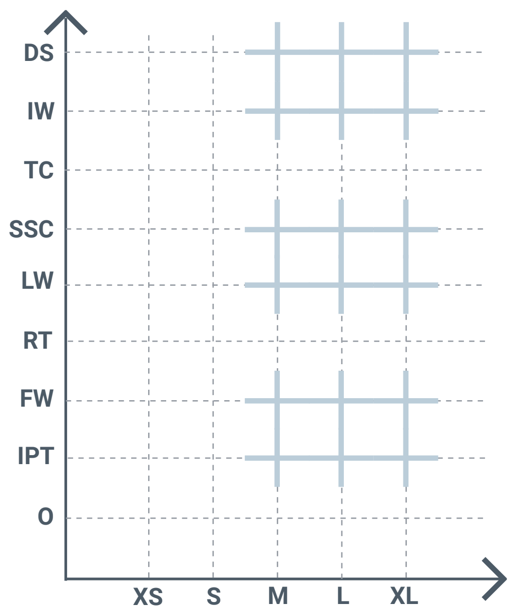


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- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

# TOOL APPLICATION EXAMPLE

Workshop title:
- WORKSHOP 7: CITY.
  Tactical Urban Planning Workshop

Professors:
- Manuel Ramos Guerra,
  José Pérez de Lama Halcón and
  Fátima Pablo-Romero Gil-Delgado

Coordinator:
- Angel L. Gonzalez Morales

The program of Fundamentals of Architecture at the University of Seville, has in its 5th course a course called Workshop 7: City. Five years ago the professors of group 5.07: Manuel Ramos Guerra, José Pérez de Lama Halcón and Fátima Pablo-Romero Gil-Delgado, coordinated by Angel L. Gonzalez Morales, started the work methodology described and that can be called "Collaborative Workshop". Over the years some professors have changed and others have joined, but the idea of generating a truly collective work space has remained constant. Together with 30 students, and thanks to the incorporation of group dynamics, professors coordinate and generate a single proposal for the urban regeneration of places as different and complex as the ones located at the Historic Center of the capital of Honduras or at the neighborhood of Torreblanca in Seville, among others. Such proposals, in most cases, have the features described above (multi-scale and multi-actors), and two others: the multinationality (students from other countries) and the multidisciplinarity (students and professors from other disciplines such as history or environmental sciences). In such context, the fundamental achievement was the ability to generate new relationships among students, professors, technicians and citizens through the elaboration of long term proposals in addition to the short-term ones, which were properly addressed following the precepts of what is known as Tactical Urbanism.

Further information about these examples can be found here: https://twitter.com/torreblancaviva?lang=es, https://www.youtube.com/watch?v=XJlukJDS9Bg

Figure 1. Students and professors at the Workshop “Feel”, 2018-19 academic year
*Source: Ángel Gonzále*

Figure 2. Works of practical application of the proposals developed in Workshop 7, 2019-20 academic year, carried out in Hondura
*Source: Ángel González*

Figure 3. Regeneration works of the Acacias Square in Torreblanca (Seville), carried out with students and professors of Workshop 7, 2019-2020 academic year, together with technicians and neighbor *Source: Ángel Gonzále*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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María F. Carrascal Pérez

11/19

**tools**

statements

# CREATIVE AND ARTISTIC APPROACHES (PHOTOGRAPHY, VIDEO, PERFORMANCE)

*уметнички приступи (фотографија, филм, перформанс) • Approccio artistico (fotografia, video, performance) • Δημιουργικές και καλλιτεχνικές προσεγγίσεις (φωτογραφία, βίντεο, απόδοση / εκτέλεση) • Acercamientos Artísticos (fotografía, vídeo, acción)*

## GENERAL DEFINITION/ EXPLANATION

**Creative and Artistic Approaches to Cultural Heritage and Sustainability** have had diverse conceptual scopes and formalizations along the second half of the 20th century, eventually becoming a differentiated path for safeguarding and promoting valuable contexts, being today identified by the European Commission in a particular cluster for research and action (Culture, Creativity and Inclusive Society: European Cultural Heritage and Cultural and Creative Industries, The New European Bauhaus, 2021-2022). With the avant-gardes of the 20th century and, more profoundly, in the revolutionary decades of the 1960s and 1970s, artistic communities had a significant role in pioneering processes of identification, appropriation and protection of a significant emerging historical and contemporary heritage. With the turn of the current century, in a period of intense development, these approaches strengthened its links with the economy. First the cultural and later the englobing creative industries acquired relevance as promoters of growth and job creation, outlining an integral model of (creative) city. It would be the financial crisis of 2008 and the health crisis of 2020, which enhanced its social meaning: citizens as a creative agents and drivers of urban innovation and creative communities as advocators of a new sustainable consciousness and civic economy operate heritage as a resource for social well-being. The Creativity-Heritage-Sustainability combo, ultimately, has different scopes, architectural and urban patterns, which go from singular obsolete spaces recycled into cultural or creative centers, district and city models with a reinforced cultural and creative identity, towards innovative regenerative processes through temporary, tactical and adaptive techniques. Current contemporary creative city-making, its alternative, civic, and inclusive methodologies and instruments (photography, video and media; site-specific works, performances, participatory/inclusive activism, etc.), become, therefore, a necessary transversal field of knowledge in the education of cultural heritage and sustainability.

## WHAT?

### CONTENT

The New European Bauhaus (EC, 2021), in order to support the European Green Deal (2019), identifies the need to build a bridge between the world of science/technology and the world of art/culture, stating that this will depend on "the capacity to leverage the power of creativity and innovation by architects, designers and artists in contemporary societies to shape a better way of living in line with the principles of environmental, social, cultural and economic sustainability, paving the way to inclusion, participation and to the creation of more resilient communities". According to this, learning creative skills, methods and instruments become central for such proposes in contemporary urban and rural contexts, as they innovate in the identification, signification and management of a growing and dynamic cultural heritage. There are strategic plans, organizations and centres created to enhance such relationships, which are contemplated either by UNCTAD guidelines, the New European Bauhaus, Next Generation EU, than by governmental and local agencies that particularly search for a social and symbolic reidentification with the past and a creative reindustrialization of the historic and contemporary contexts. From 2020, European Commission contemplates in its Horizon 2030 a specific focus and line of fund on Cultural heritage and Cultural and Creative Industries. On one hand, creative industries and tactics, and the communities around them, contribute to create awareness of its potential as a resource for the betterment of social well-being. They are able to enhance heritage values and contribute to their preservation, to improve the sense of belonging of users/residents, and the participation and accessibility for persons with specific fragilities, while they boost a creative and sustainable development from such cultural contexts (Carta, 2007; Landry, 2012; UNCTAD, 2013; Carrascal, et al. 2021). On the other, dynamic artistic tools such as photography, video, performance, drawing, or modelling, combined with the traditional architectural instruments, contribute to discover, investigate and communicate specific heritage values, sites and systems, as well as to explore future alternatives and emergent cases (Mattern, 2012; Charvillat, 2010; Carrascal, Rey, Prieto, 2020). Both, creative city-making skills and instruments, and its derived methodologies, are particularly appreciated in the global context of eco-social crisis, becoming a necessary transversal field of knowledge in the education of cultural heritage and sustainability. Working with such alternative tools, future architects and planners enhance performative and communicative skills, engagement skills, and research skills.

## HOW?

### METHODS

Address general teaching philosophy: Due to the experimental nature of a creative process, this concept should be promoted in a learning context through problem-based projects that enable different responses, processes and results, using active methodologies.

Address the leading methods and tools which should be engaged within the learning process: "Critical thinking", "Critical Evaluation of Cultural Heritage", and "Sustainability Analysis" from an interdisciplinary perspective. Theory and practice. From teaching to learning/from learning to leading. Classroom practicum coordinated and driven by the students, organized in teams. Continuity of knowledge. Active participation of other students generations.

Address learning styles and activities,

1. Opening sessions. Selection of recent local or international news and events of interest. Debate articulation.
2. Sharing method and process discussion with former students. Teamwork and participatory procedures.
3. Seminar on documentary research within the creative process with young researchers. Connecting with academic research.
4. (On-line) Micro-lectures on related and current discussions. Transversal topics and guests. Interdisciplinarity.
5. Workshop sessions. Design of the goals and format of the architectural artifacts for the game with architects (former students). Collective thinking. Communication. Creative Design processes.
6. Site-specific experimental actions for design testing. Field work. Surveys. Direct experience.
7. Sessions lead by teams. Game activity. Documentary photography activity. Mapping.
8. Exhibition and presentation of results. Social media. Curatorship procedures.

Address possible/appropriate learning environment: student-centred; knowledge-centred; assessment-centred; and community-centred.

# WHY?

## GOALS

Because of the instrumental nature of this concept, it should be transversal to all materials and assignments around cultural heritage and sustainability. There are to main central ideas about this topic and therefore derived teaching intentions:

1- Creativity as booster of heritage, from a socio-cultural (pioneering creative communities), economic (creative industries) and urban (creative city-making) perspective.
-Acknowledging in Contemporary History the creative agents and procedures that dealt with cultural heritage.
-Learning about the context of the Creative Industries (II.CC.) in cities and its particular role in urban regenerative processes, civic economies and resilient communities in contemporary cities.
-Managing innovative temporary, tactical, adaptive, and participatory practices and procedures for the identification, reactivation and preservation of cultural contexts.
-Identifying architectural and urban production around heritage as a creative industry. Creative reindustrialization of cities.
-Managing procedures to integrate and consider citizens as urban innovators contributing to the goals.

2- Creativity as tool for flexibly and experimentally approaching heritage. There are particular artistic and innovative tactics and tools aimed to identify, study, disseminate and operate the complexity of such realities informing sustainable processes.
-Managing conceptual and documentary photography, video and media; site-specific artworks (urban art, landart, public art); happenings and performances; 3D modelling; action painting; participatory/inclusive artistic activism; artistic mapping; curatorship and exhibition, among others, which are increasingly relevant to face the challenges of a global and hyper-communicated world.
-Using the combination of local and international urban heritage case studies to assure the relationship between the course and the current reality.
-Interpreting the history and legacy of their locations for sustainable projects with a congruent and preventive praxis.
-Contributing to identification, preservation and integration of tangible and intangible heritage in the current contexts using a multifocal theoretical and practical approach.
-Advancing and testing strategies and techniques for a comprehensive regeneration of a context using creative and artistic approaches (meanwhile practices, participatory processes, affective techniques, etc).
-Incorporating inclusiveness and ethical precepts addressing social participation and service in the projects.



## TEACHERS' COMPETENCIES

In order to cover the aspects related to creativity as booster of heritage and as a tool for approaching heritage, tutors and mentors should have also the following teaching intentions:

-In order to contextualize it, creative agents, industries and procedures that dealt with cultural heritage in alternative and artistic ways should be included in the teaching and research of architectural and urban history. This required a constant update of the sources and class dynamics.

-Managing and communicating innovative temporary, tactical, adaptive, and participatory practices and procedures for the identification, reactivation and preservation of cultural contexts.

-Managing and communicating artistic and innovative tactics and tools aimed to identify, study, disseminate and operate the complexity of such realities informing sustainable processes. Conceptual and documentary photography, video and media; site-specific artworks (urban art, landart, public art); happenings and performances; 3D modelling; action painting; participatory/inclusive artistic activism; artistic mapping; curatorship and exhibition, among others.

-Using a balanced combination of local and international urban heritage case studies to assure the relationship between the course and current reality.

-Interpreting the history and legacy of their locations for sustainable projects with a congruent and preventive praxis.

-Contributing to identification, preservation and integration of tangible and intangible heritage in the current contexts using a multifocal theoretical and practical approach.

-Advancing and testing strategies and techniques for a comprehensive regeneration of a context using creative and artistic approaches (meanwhile practices, participatory processes, affective techniques, etc).

-Incorporating inclusiveness and ethical precepts addressing social participation and service in their projects.

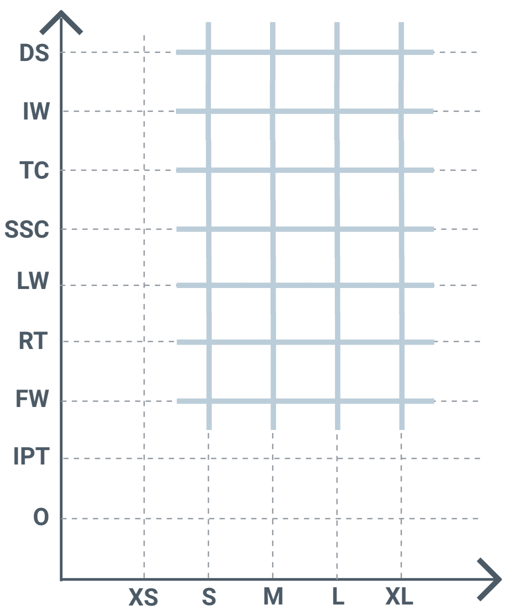
-Boosting further research training, towards the doctorate.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ■ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- □ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ■ Urban and Regional Planning Scale (L)
- ■ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- □ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ■ how the theories, practices and technologies of the arts influence architectural design;
- ■ the creative application of the fine arts and their relevance and impact on architecture;
- ■ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ■ theories of urban design and the planning of communities;
- □ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ☐ the impact of buildings on the environment, and the precepts of sustainable design;
- ☐ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

## TOOL APPLICATION EXAMPLE

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Program title:
- Creative Industries Program in the Management Plan for Heritage Municipal Buildings of Seville

Developed by:
- Civil City Council of Seville

Year:
- 2019-2021

Project title and location:
- Magallanes Center for Cultural and Creative Industries Entrepreneurship at the former Royal Artillery Factory

Authors:
- INTERREG Europe

Year (period) of the project:
- 2019-2021

Historically, Seville's craftsmen and artists' communities, and its derived creative Industries, have had a solid connection with the built heritage of this city, having still today a growing presence in certain historic areas together with new creative activities. Therefore, the 2021 Management Plan for 115 Heritage Municipal Buildings promoted by Seville's City Council, which innovates in a protocol for an integral approach to this relevant number of public properties, also addresses a specific program for promoting Creative Industries in such context: creative communities and practices as drivers of economic growth and social welfare, but also as contributors of the processes of identification, preservation and maintenance of these buildings. The former 9500 m2 Royal Artillery Factory, one of the greatest pieces of Seville's industrial heritage, catalogued as Asset of Cultural Interest in 1985 and inactive since 1991, will become the core of this project as the Magallanes International Center for Cultural and Creative Industries. Its rehabilitation is also an open pioneering process of "meanwhile" local cultural and participatory events, nurturing the decision-making and a social re-identification with the place.

La creación. El paisaje de la tormenta. Real Fábrica de Artillería de Sevilla, 2018.

http://www.sevillafest.com/2018/la-creacion-el-paisaje-de-la-tormenta/

https://laejecutora.com/project/artilleria

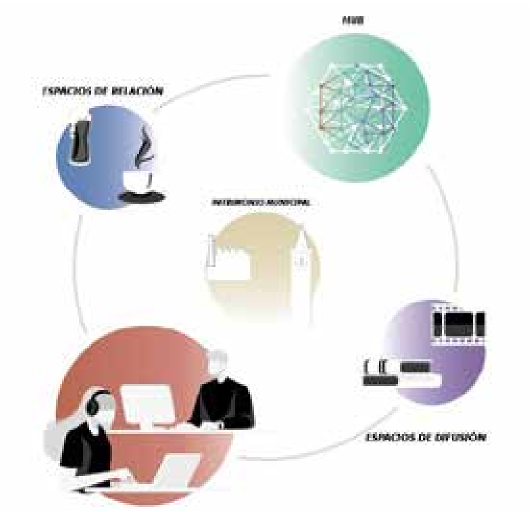


Figure 1. Creative Industries Program in the Management Plan for Heritage Municipal Buildings of Seville
*Source: Espacio Q, USE.*

Figure 2. Artist Ro Sánchez acting at Royal Artillery Factory in restoration
*Source: María F. Carrascal Pérez.*

# RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

////////////////////////////////////////////


[1] Carrascal Pérez, M. F. (coord.), García Vázquez, C., Alanís Arroyo, A., Tabali, S., Romero Ojeda, J. M. (2021). Creative Industries in the Management Plan for Sevilla's Historic Built Heritage. Sevilla: Gerencia de Urbanismo y Medio Ambiente. Ayuntamiento de Sevilla, Fundación de Investigación de la Universidad de Sevilla, Cátedra UNESCO CREhAR, IUACC. Prof. Carlos Plaza Morillo (general coord.). https://www.urbanismosevilla.org/ficheros/pdf/plan-director-de-patrimonio-del-patrimonio-historico-municipal

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[11] UNESCO (2021). Culture in Crisis: Policy guide for a resilient creative sector. United Nations, Educational, Scientific and Cultural Organization. Diversity of Cultural Expression. https://en.unesco.org/creativity/publications/culture-crisis-policy-guide-resilient-creative

[12] New European Bauhaus website: https://europa.eu/new-european-bauhaus/index_en


**Related Educational Projects:**

[1] "Sevilla Industria de Creatividad" (2020). Loren Méndez, M. (coord.) HTCA4 - USE.https://cicus.us.es/sevilla_industria_creatividad/

[2] Q Docencia/ Q Learning. Laboratorio Q, de Lugares de Creatividad Urbana/ Lab Q on Urban Creative Places. (2012-2021) Espacio Q (coord.) HTCA4 - USE. http://www.laboratorioq.com/zona/global/

[3] "Pioneering an Open Access to the City. City and Art cross-dialogues on space. From the New York of the 1970s", (2018). Carrascal Pérez, M. F.(coord.) Special Seminar/course. Cornell AAP, New York.

[4] Carrascal Pérez, M. F., Rey Pérez, J., Prieto Peinado, M. (2020). Transferencias de la investigación a la docencia: Metodologías creativas desde el Nueva York de la década de 1970. In Innovación Docente e Investigación en Ciencias, Ingeniería y Arquitectura. Avanzando en el proceso de enseñanza-aprendizaje (pp. 383-397). Madrid. Dykinson.

UB-FA

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Aleksandra Milovanović

12/19

**tools**

statements

# HERITAGE VALUE MATRIX - HVM

*вредносна матрица наслеђа • Heritage Value Matrix • Πλαίσιο αξιών για την πολιτιστική κληρονομιά • Matriz del Valor del Patrimonio*

## GENERAL DEFINITION/ EXPLANATION

The **Heritage Value Matrix (HVM)** is recognized as a growing analytical tool in the study of architectural and urban heritage, which finds its methodological roots within the value-based approach of architectural programming. The EU Council Work Plan for Culture 2019-2022 denotes architecture as a cross-cutting field and "as a discipline that encompasses the right balance between cultural, social, economic, environmental and technical aspects for the common good". The right balance between these aspects also implies a focus on achieving sustainable development, which is why the identification of values that will be the triggers of this process is extremely important in research, education, practice and policy making. At the general level, **HVM** is an analytical cross-cutting system in which two axes intersect - problem and value. The first activates a problem-based approach in order to identify the scope that needs to be critically engaged through design process (problem-solving), while the second points to values that decode the contextual framework of heritage.

# WHAT?

## CONTENT

In order to understand the methodological nature of the **HVM** and its operative role in research by design process, the content of **HVM** curricula should have a two-fold perspective: (a) conceptualization of matrix, defining criteria and values, and structure for analysis, and (b) conducting an analysis on a reference case study for a heritage construct. The content should be research-oriented so that the student is encouraged by the analytical process of analysis - synthesis.

**A. HVM conceptualization**

- Defining criteria and values
- Structuring the matrix
- Graphical development of matrix - diagramming

**B. HVM development**

- Selecting relevant case study
- Analysis – combining desk and on-site research
- Development of matrix

Implementing both perspectives contribute to students developing skills for independent research design in addition to its implementation. A special segment of content in the context of the relationship between sustainability and heritage is positioned within the **HVM** conceptualization in defining criteria and values with special reference to pillars of sustainability.

# HOW?

## METHODS

Through recognizing all the features of the **HVM** approach, learning should include a combined teaching philosophy in order to achieve a high level of knowledge about HRP in the educational process:

(1) *problem-based* represent core, both teaching and learning philosophy, with the ultimate goal to identify specific problem concerning built heritage and solve it through design (problem solving);

(2) *information-oriented* philosophy is applied in order to form an information matrix consisting of cross-categories of values (function, form, economy and time), and information fields (goals, facts, concepts, needs and problem) relevant for design process – both values and fields are considered from the aspect of sustainability;

(3) *community-based* philosophy makes a logical factor in the **HVM** education process primarily due to the nature of user-oriented and participatory nature of **HVM** conceptualization and development; to define design inputs, and enhance research by design approach in line with the community needs, behaviour and habits.

In order to achieve a high level of applicability understanding the **HVM** approach in the design process, the necessity of case study engagement in educational process is recognized - research on specific spatial polygons, locations and contexts with multilayered and multiscale background. Contextual factors represent the basic input parameters for defining criteria and values within **HVM** conceptualization phase, which is why learning in a real environment and on concrete examples is of great importance for **HVM**.

# WHY?

## GOALS

Through mastering the proposed twofold content future professionals could develop:

(1) knowledge about relevant analytical tools for decoding cultural, economic and political aspects of cultural heritage;

(2) knowledge about relevant analytical tools for understanding contextual framework of cultural heritage;

(3) ability to analyse heritage through multiscale approach (from the level of building interior to landscape level) regarding their urban context and historical development, the functionality, the materials used, and the technical development;

(4) ability to make architectural and urban design choices on different scales, based on analysis and evaluation of current historical information;

(5) ability to systematize contextual analysis in a functional relation within heritage value matrix;

(6) ability to develop the value-framework for critical analysis and evaluation of heritage.

## TEACHERS' COMPETENCIES

Following the general definition of **HVM** an analytical cross-cutting system in which two axes intersect - problem and value, a complex professional task is set for architectural educators primarily when it comes to the ability to use and cross varied teaching philosophies (as it explained in methods section). In this sense, the special competencies of teachers in **HVM** education relate to

(a) *teacher profile 1*: knowledge deliverer and knowledge designer - working within multiple disciplines and strong understanding the relationship of architecture to other disciplines in order to provide the widest possible scope for transferring of values, as well as design indicators,

(b) *teacher profile 2*: skills enhancer – the ability to articulate the relationship between students' analytical thinking and its representation through the intersection of visual methodologies (graphical techniques and tools - **HVM** conceptualization and HVM development),

(c) *teacher profile 3*: social agent – the ability to create and establish learning environment outside the school in real conditions and to provide routes for community-based philosophy of learning.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ☐ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ☐ Laboratory work (LW)
- ■ Research Thesis (RT)
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- ☐ Other (O)

## SCALE

- ☐ Construction Detailing and Interior Design Scale (XS)
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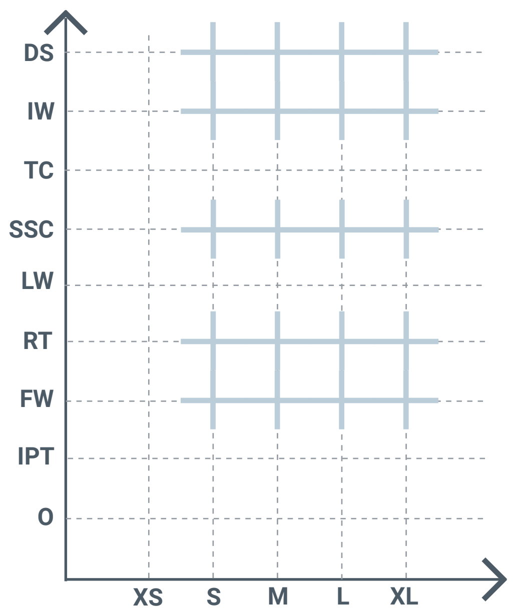


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ☐ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ■ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

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- ■ theories of urban design and the planning of communities;
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- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

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- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

# TOOL APPLICATION EXAMPLE

Studio title:
- Design Studio: Heritage Reprogramming

Mentorship:
- A. Nikezić, J. Ristić Trajković A. Milovanović

Academic year / school:
- 2020-2021 / UB-FA

| Values | Environmental | Human | Social | Systemic | Temporal | Economic | Aesthetic |
|---|---|---|---|---|---|---|---|
| Indicators | location<br>climate<br>urban context<br>regional context | physical<br>physiological<br>psychological<br>functional | cultural<br>legal<br>common | materials<br>technologies<br>processes | growth<br>change<br>constancy | building costs<br>operationalization<br>maintenance | form<br>space<br>style<br>tradition |

Figure 1. Programming value matrix according to Hershberger
*Source: Hershberger 2002*

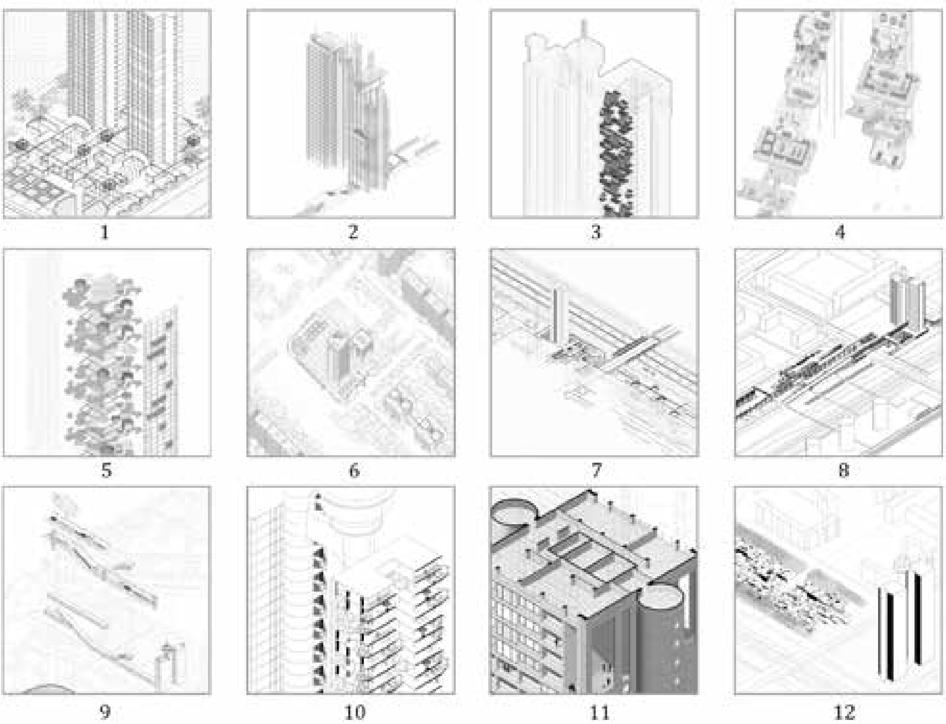


Figure 2. Conceptual models illustrations based on HVM - students: (1) Sofija Sinobad, (2) Una Obradović, (3) Danica Petrović, (4) Dunja Dedić, (5) Milica Mijajović, (6) Nenad Pavlović, (7) Andrej Jovanović, (8) Katarina Spasojević, (9) Jovana Prijović, (10) Teodora Stevanović, (11) Mihailo Milosavljević, (12) Milica Knežević.
*Source: Ristić Traković, J. et al 2021*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

//////////////////////////////////////////


[1] Nikezić, A., Ristić Trajković, J., Milovanović, A. (2021). REPROGRAMMING ARCHITECTURAL HERITAGE within the Studio-based Education. Belgrade: Univeristy of Belgrade – Faculty of Architecture.

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[3] Clarke, N., Kuipers, M., Stroux, S. (2020). Embedding built heritage values in architectural design education, International *Journal of Technology and Design Education,* 30, 867–883.

[4] Hershberger, R. (2002). Behavioral-Based Architectural Programming. In: R.B.Bechtel and A. Churchman (Eds.)- Handbook of Environmental Psychology, John Wiley & Sons, Inc.


| Conceptual Model | Aim/ Reprogramming Perspective | Desired Social Wellbeing Outcome | Key Words/Notions |
|---|---|---|---|
| 1 | **Urban Practices of Everyday Life** | Enhancing Access to Education | active social engagement<br>educational mediums<br>learning |
| 2 | **Urban Commons** | Enhancing Participation in Political Life | political institutions<br>place of cultural expression<br>creating a new culture |
| 3 | **Modernist Housing** | Enhancing Living Standards | housing culture<br>new ways of living and leisure<br>dwelling activities |
| 4 | **Leisure Time** | Enhancing Spiritual Fulfilment | dichotomy of working–living<br>antithesis of capitalism<br>sequences of space |
| 5 | **Urban Nature** | Enhancing the State of Health | heritage in harmony with nature<br>health of residents<br>biological diversity |
| 6 | **Urban Economy** | Enhancing Economic Security | circularity of heritage<br>prefabrication and modularity<br>economic aspects of rehabilitation |
| 7 | **Collective Memory** | Enhancing Attachment to Place | heritage as an inseparable whole<br>preservation of memories<br>story of the city |
| 8 | **Urban Mobility** | Enhancing Access to Community Resources | mobility for social groups<br>diversity of common spaces<br>social dimensions of life |
| 9 | **Urban Recreation** | Reducing Level of Stressors | urban recreation<br>interaction of citizens with nature<br>natural environments |
| 10 | **Proxemic** | Enhancing Pleasantness and Safety of Physical Environments | spatial and social distancing<br>personal and common space<br>flexibility and transformability |
| 11 | **Architectural Tourism Scenarios in the Modernist City** | Enhancing Cultural Diversity and Social Acceptance | tourist potentials of heritage<br>presentation of heritage<br>urban exploration and cultural practice |
| 12 | **Public Space** | Enhancing Community Connections | holistic public spaces<br>modular environments<br>system of social interactions |

Figure 3 . Overview of 12 conceptual models
*Source: Ristić Traković, J. et al 2021*

UB-FA

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Nevena Lukić

13/19

**tools**

statements

# THERMAL / ENERGY SIMULATION

*термално/енергетске симулације • Simulazione energetica/ termica • Θερμική / Ενεργειακή προσομοίωση / Simulación Térmica/Energética*

## GENERAL DEFINITION/ EXPLANATION

A **thermal energy simulation** is a tool used to determine the energy performance and energy usage of both existing and new buildings. This tool enables insight into the performance of different types of materials and constructions and optimizes the building design process. In the context of existing and architectural heritage buildings, this tool allows an overview of current building performance as well as analysis of future performance, after restoration. Heritage buildings have special problems regarding the presence of non-standard elements, survey uncertainties regarding construction techniques, the presence of degradation of the building itself that should be mapped during a survey and need special treatment. The **thermal energy simulation** involves creating 3d models of the selected object and then analysing its performance using BIM-based software or interoperable simulation tools. This tool has become an important part of architectural practice and regulations, as part of the building design process as well as an integral part of the process of energy certification, so it should be included in architectural education.

# WHAT?

## CONTENT

Thermal energy simulation is a widely used tool in architecture practice and it is a standard procedure in building design and renovation processes allowing relatively easy and precise insight into building performance and energy usage. In the context of architectural heritage this tool should be included in architecture education in different manners providing:
- theoretical knowledge: allowing students a better understanding of building performance and energy usage, and consequences of the decision-making process during different stages of building design and renovation as well as different material and construction usage

- practical skills: students should be introduced to different software and tools that allow them insight into the performance of the building

- critical discussion based on the findings and simulation results to be able to understand building performance and consequences of different decisions during design and renovation process

# HOW?

## METHODS

The general teaching style should be through action learning and a problem-based approach, as well as practical knowledge - introducing different tools and skills and their application.

Theoretical knowledge, implemented in lectures expanding students' knowledge in specific areas regarding energy efficiency and green building design, building physics, thermal performance analysis, BIM modelling while encouraging them to do independent research and work. Development of different needed practical skills including observation techniques, and different analyses allowing insights in building performance. Buildings specific IT skills in terms of practicing different 3D modelling software (Revit, Rhino, AutoCAD 3D, etc.) and simulation software and tools (Ecotect, Energy plus, TRNSYS, etc.) as well as usage of different tools that allow collecting and analyzing building data and performance. The critical approach to simulation results is an important aspect, providing conclusions and solutions that should allow architects to respond to challenges regarding building restoration and allow them to be able to decide which design strategies and alternatives are most appropriate ones.

# WHY?

## GOALS

Students should be introduced with:
- usage of **Thermal energy simulation** as a tool in evaluating existing buildings and cites
- needed IT skills - software usage (modelling and simulations) as well as observation and data collection methods (analysis of building projects, observation, site inspections)
- data reviewing methods - methods for developing and confirming insights about the performance of the building elements and building as a whole
- critical discussion based on the findings and defining and recommending future actions

After completing the course, students should be able to understand **Thermal energy simulation** tools; understand how using this tool can help in the context of renovation and energy restoration of architectural heritage both meeting defined needs and respecting building integrity and levels of protection; be able to use required software programs and tools, and develop a capacity for future research and understanding of this topic.

## TEACHERS' COMPETENCIES

- specialist knowledge in both theoretical and needed technological and practical skills -theory, regulations, legislative, adequate programs and software, data analysis tools

- continuous education and professional development

- Pedagogical skills - teaching theoretical knowledge and also implementation of principles on real-life examples, developing critical thinking and problem-solving approaches, and empowering individual research to expand students' knowledge

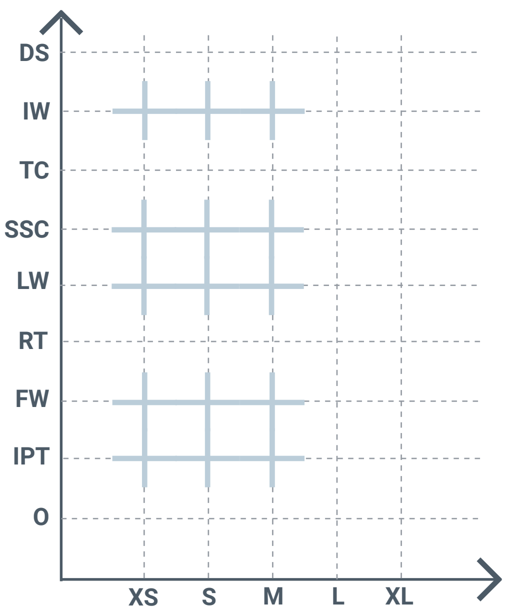
- inspiring creativity, critical thinking, and experimentation implementing of new methods and techniques into educational activities;

## COURSE TYPE

- ☐ Design Studio (DS)
- ■ Intensive Workshop (IW)
- ☐ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ☐ Research Thesis (RT)
- ■ Field work (FW)
- ■ Internship Practical training (IPT)
- ☐ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- ■ Urban Design Scale (M)
- ☐ Urban and Regional Planning Scale (L)
- ☐ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ☐ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ☐ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ☐ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ☐ theories of urban design and the planning of communities;
- ☐ the influence of the design and development of cities, past and present on the contemporary built environment;
- ☐ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- □ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ■ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- □ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- □ critically examine the financial factors implied in varying building types, constructional systems, and specification
- □ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- □ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

# BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

Example title:
- Urban environment Solar radiation analysis outputs in, Autodesk Revit (a) and in Autodesk Ecotect Analysis (b)

Reference:
- Gherri, B. (2018) Early-Stage Environmental Modeling: Tools and Strategies for Climate Based Design in Conference: Advanced Building skins

Year:
- 2018

Example title:
- Building, solar radiation simulation -, Revit, Ecotect

Reference:
- Lassandro, P., Tundo, A. (2014) Energy audit and comfort evaluation of a school building with the students' participation. in 40th IAHS World Congress on Housing At: Funchal- Portugal

Year:
- 2014

Example title:
- Building components, extracted building surfaces and solar radiation simulation in Revit and Dynamo visual programming platform

Reference:
- Salimzadeha, N., Vahdatikhakib, F. , and Hammad, A. (2018) BIM-based Surface-specific Solar Simulation of Buildings. in 35 th International Symposium on Automation and Robotics in Construction (ISARC 2018)

Year:
- 2018

Thermal energy simulation has become an integrated part of the design of architectural projects and can be applied at the macro scale - defining the performance of the whole sight or complex with its environment (climate, urban environment) and at the smaller scale defining performance of building segment or component. The process of Thermal energy simulation involves collecting building data, creating a 3D model of the building, and then using additional building simulation software to examine the influence of external factors on the building and its envelope. Since this tool became standard procedure no specific example has been chosen, but different scale approaches that demonstrate the general interface and process of the simulation itself.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

//////////////////////////////////////////


[1] Szokolay, S. (2004) *Introduction to Architectural Science*, Architectural Press

[2] Hens H. (2016) *Building Physics-Heat, Air and Moisture, Fundamentals and Engineering Methods with Examples and Exercises*, Ernst & Sohn

[3] Troi, A., Zeno, B. (2015) *Energy Efficiency Solutions for Historic Buildings: A Handbook*. Birkhäuser

[4] Crawley, D. B., Hand, J. W., Kummert, M. and Griffith, B. T. (2005) Contrasting the Capabilities of Building Energy Performance Simulation Programs. *Building and Environment*, 43 (4), p 661-673

[5] Blenkarn, N. (2015). Building Information Modelling (BIM) for Refurbishment. *Journal of Building Survey, Appraisal & Valuation,* 4(1), 55–62.

[6] Eastman, C., Teicholz, P., Sacks, R. & Liston, K. (2011). *BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors*. John Wiley & Sons.

[7] Giebeler G., Krause H., Fisch R., Musso F. (2005). *Refurbishment Manual*. Birkhäuser

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14/19

**tools**

statements

# LIGHTING SIMULATION

*светлосне симулације • Simulazione Illuminotecnica •*
*Προσομοίωση Φωτισμού • Simulación Lumínica*

## GENERAL DEFINITION/ EXPLANATION

Light is one of the critical aspects of architecture and efficient lighting design should be an integral element of the design of any building.

Scientific studies have shown that appropriate and proper lighting does not only affect human health but the daily human moods as well.

**Lighting Simulation** is a procedure to evaluate a system's optical performance and to analyze the system's final illumination effect. As system we refer to the sources of natural lighting and to the artificial lighting as well.

By capitalizing on the natural light resources available, reliance on artificial light sources can be reduced which in turn decreases energy consumption. This can have a huge impact on the environmental footprint of the building.

Especially for historical buildings a right balance between ambiance, purpose, and minimum energy use, must be achieved. As these structures usually lose their primary functions and are reused with a new purpose, often diametrically opposed to the original one, detailed lighting studies following the new building standards, must be performed.

# WHAT?

## CONTENT

There is a great concern to develop and evaluate retrofit strategies in heritage buildings concerning their environmental behaviour. The designers propose methods to reduce the energy consumption of these buildings either through modification of building envelope or through HVAC and artificial lighting systems. At the same time, they try to create thermal and visual comfort for the building users.

The use of natural lighting can condense energy costs up to 60%. This can be achieved by adopting various building envelope design strategies through the **lighting simulation** tool in order a careful balance of heat gain and loss, glare control and visual quality can be obtained. Following then, **lighting simulation** defines the amount of necessary artificial lighting as supplement to the natural one.

Also, refurbished heritage buildings usually lack in meeting the required lighting standards defined for their new function. **Lighting simulation** helps the designers, whether architects or engineers, to consider refurbishment design solutions based on the current building codes and the relevant lighting legislation and to establish design priorities .

# HOW?

## METHODS

Teaching **Lighting Simulation** is considered particularly important, as it is one of the basic tools to evaluate the efficiency of the envelope design and of the materials used from the aspect of building physics and sustainability. While thermal comfort and energy performance of refurbished heritage buildings is usually studied, limited work have been done on improving daylight quality and visual comfort in such buildings, despite that daylight optimization can remarkably affect the energy consumption of buildings.

Teaching should be characterized by both theoretical lectures and laboratory exercises using computer software. The aim of the course would be to learn the working methods and steps for the simulation, to explore the possible design alternatives for the refurbishment leading to a sufficient lit environment and to an energy efficient design strategy, and to critically evaluate the findings from the simulation and from the produced designs. It can also be used to calculate the minimum energy costs to supplement daylighting with artificial lighting in order to meet the necessary light levels in the space.

Eventually, students would be provided with the basic knowledge to record, analyze and document historic buildings and restoration methods, considering the environmental benefits and the wellbeing of the users.

As compared to conventional design practices with only studio work, the use of **lighting simulation** can lead in better design where a careful balance of heat gain and loss, glare control and visual quality can be obtained.

# WHY?

## GOALS

Using **lighting simulation** with computer software, it is possible to create an accurate model of how natural and artificial light will be combined in order that a sufficiently lit interior space is created.

The objectives of using **lighting simulation** are:

- to suggest some recommendations for better lighting in order the requirements and the state standards for the new use of the heritage building are met
- to create several photorealistic scenarios of different lighting
- to create a design lighting knowledgeable plan
- to predict and document daylight levels and appearance of a space prior to realization of the building design.
- to offer recommendations to the architect on how to maximize the use of natural light and consequently to reduce artificial lighting energy, without to play down the visual comfort.
- to assess lighting design strategies on different building design envelopes and different materials, such as the size and position of openings, the properties of coatings and linings (reflectivity, color, etc.), shading devices, light shelves, etc.
- to propose solutions for controlling daylight to balance heating and cooling loads by adjusting the amount of solar gains
- to suggest solutions for uniform distribution of daylight in order to avoid glare
- to provide accurate and reliable data for establishing the artificial lighting based on the efficiency of lamps;
- to explore and understand the key lighting regulations and programs addressing energy efficient lighting according to the building type, building age and use.

## TEACHERS' COMPETENCIES

The adequate theoretical background about building physics in combination with the knowledge of the analysis and recording of a historic building (both before and after restoration or refurbisment) are the key chatracteristics of an academic to teach **LIGHTING SIMULATION**.

More explicity, in order to introduce the notion of simulation and effectively transfer knowledge about lighting conditions in heritage buildings, the teachers' competences and profile could feature:

- the teacher as a skillful expert, in using computational tools and methods
- the teacher as an interdisciplinary expert about building physics
- The teacher should have excellent knowledge of the building codes and lighting legislation and requrements
- The teacher as an expert in presenting the procedure of a simulation must also have the knowledge to discuss about the nature of light, photometry issues and the visual system.
- the teacher as a knowledgeable expert, able to combine theoretical principles with design and provide clear recommendations for the refurbishment in context with the functionality of the alternative proposals, energy costs, legislation and feasibility of construction
- the teacher as a lifelong learner able to update skills and knowledge of technological innovation, new materials, building physics, computational simulation tools, contemporary legislation- national and international.

## COURSE TYPE

□ Design Studio (DS)
■ Intensive Workshop (IW)
□ Theory Course (TC)
■ Seminar (short comprehensive) (SSC)
■ Laboratory work (LW)
■ Research Thesis (RT)
□ Field work (FW)
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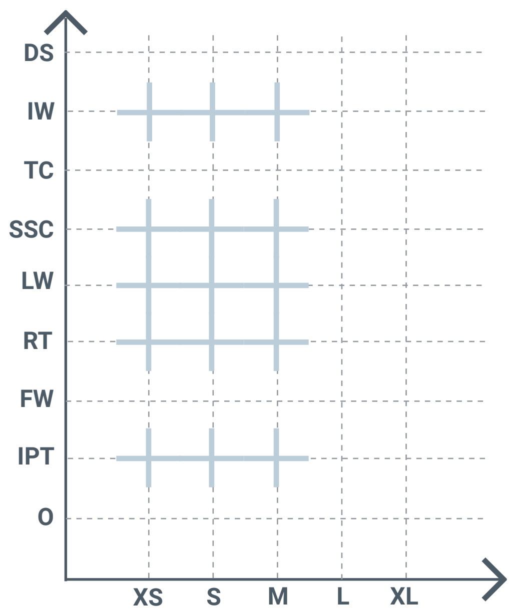


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;

■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;

■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

□ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;

□ the influence of history and theory on the spatial, social, and technological aspects of architecture

■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

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□ the creative application of the fine arts and their relevance and impact on architecture;

■ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

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□ theories of urban design and the planning of communities;

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**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- □ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ■ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ■ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- □ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

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- ■ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

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- ■ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ■ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ □ *Checklist*

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Project title and location:

- Investigation of restoration methods and incorporation of new educational and architectural programs in the historic building of the Theological School of Halki

Authors:

- Research program carried out by Aristotle University of Thessaloniki with the support of Ecumenical Patriarchate of Constantinople. The results were published in: "The Theological School o Halki: the building and its restoration", A. Lada & V. Hastaoglou (Eds)

Year (period) of the project

- 2012-2013

Figure 1. The building complex of the Theological School of Halki: Main entrance *Copyright: (A.Lada & V Hastaoglou (eds), 2016)*

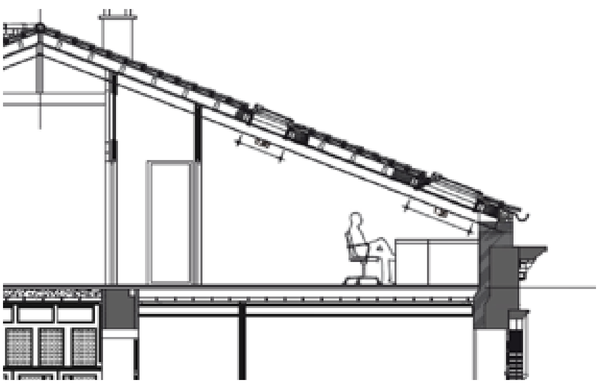

Figure 2. The attik which is proposed to be turned into dormitory rooms *Copyright (A.Lada & V Hastaoglou (eds), 2016)*

The Historical Theological School of Halki is situated on the island of Halki in the Bosporus sea.

With the prospect of the reopening of the Theological School of Halki, procedures and studies for the renovation, the reuse and the extension of the building were undertaken. The variety, the nature and type of spaces, and the quality and the age of the historical building complex require to pay attention to the environmental conditions and to create an acceptable indoor environment in every room; a lighting simulation was undertaken.

The evaluation of natural lighting conditions is based on ISO 12464. The software programmes ECOTEC and RADIANCE are used for calculating the homogeneity of daylight penetration and the daylight factor.

The aim of the lighting simulation was:

- in the case that the rooms/spaces are restorated and consequently their envelope construction changed (e.g. double glazing replaces the single one, the width of external walls increase due to civil engineering interventions, there is replacement of material finishes, etc.), to assess the daylighting conditions in order to find out the potential daylighting to replace artificial lighting and vise versa, in order the space meets the acceptable illuminance level
- in the case that the rooms/spaces change their use and the new use must meet new acceptable illuminance level, to evaluate the basic architectural decisions and determine several details, such as the size and place of the new apertures, the properties of elements used, etc. For example the attic is proposed to be transformed into dormitories, which need openings for lighting and ventilation. Several simulations were carried out, regarding energy savings and visual comfort.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

//////////////////////////////////////////


[1] A. Lada & V. Hastaoglou (Eds), "The Theological School o Halki: the building and its restoration", Theological School of Halki, Thessaloniki, 2016

[2] Architectural Design, (1997), Light in Architecture”,

[3] Baker N., Fanchiotti A., Steemers K., (eds) 1993. “Daylighting in Architecture – a European Reference book”, Commission of the European Communities Directorate - General XII for Science Research and Development, James & James (Science Publishers) Ltd,

[4] Carla Balocco, Martina Cecchi, and Giulia Volante (2019). Natural Lighting for Sustainability of Cultural Heritage Refurbishment , Sustainability 11(18), 4842; https://doi.org/10.3390/su11184842

[5] Desktop Radiance 1.0 Desktop Radiance is a Windows 95/98/NT software package that integrates the Radiance Synthetic Imaging System with AutoCAD Release 14. Desktop Radiance includes libraries of materials, glazings, luminaires and furnishings so you can quickly create realistic lighting models.

[6] Guzowski, Mary (2000). Daylighting for sustainable design, New York, London : McGraw-Hill

[7] http://andrewmarsh.com/sotware/ (previous Autodesk® Ecotect® Analysis , www.autodesk.com/ecotect-analysis)

[8] IEA , SHC Task 21/ ECBCS Annex 29 (2000). International Energy Agency Energy Conservation in Buildings and Community Systems Programm : Daylight in Buildings: A source book on daylighting systems and components

[9] Marc Fontoynont (2014) . Daylight Performance of Buildings , James and James

[10] Phillips Derec (1997). Lighting Historic Buildings, Architectural Press

[11] VELUX Daylight Visualizer is a validated simulation and visualization tool for daylighting design and analysis. htps://commercial.velux.com/inspiraton/daylight-visualizer


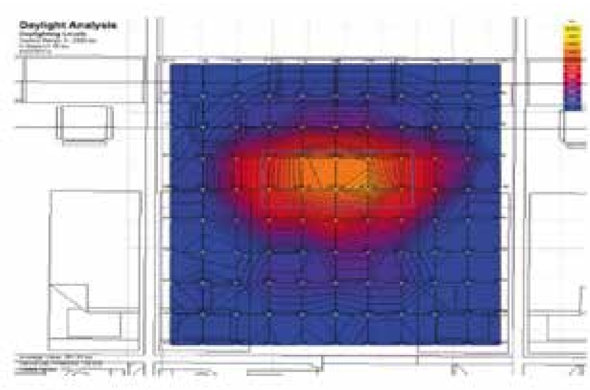


Figure 3a. Daylight factor values over the dormitory room: a central roof window



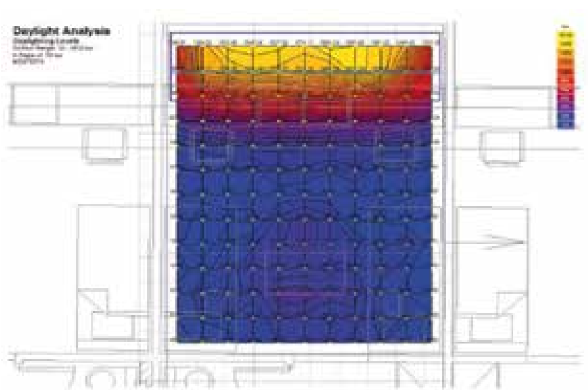


Figure 3b. Daylight factor values over the dormitory room: two roof windows

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Nevena Lukić

# 15/19

# tools

statements

# (POST)-OCCUPANCY EVALUATION

*евалуација употребе објеката • (Post)-occupancy evaluation • Αξιολόγηση της απόδοσης/απόκρισης κατά/μετά την χρήση του κτιρίου/συνόλου • Evaluación Posterior a la Ocupación*

## GENERAL DEFINITION/ EXPLANATION

**Post-occupancy evaluation** (**POE**) is a term defining systematic evaluation of the performance of buildings after they have been built and occupied for some time. It focuses on building occupants' needs, providing insights into the consequences of past design decisions and the resulting building performance. Goals and applications of **POE** can vary and this method can be used as feedback and documentation to measure utilization, satisfaction, and impact. The application of **POE** includes analysing building performance and sustainability, updating and improving the building and its use, justifying new construction or remodelling of existing buildings, updating and improving guidelines for the architectural profession as a basis for creating better buildings in the future. Since heritage buildings often require renovation or adaptation, post-occupancy evaluation is an important tool to evaluate both the current state of the building as well as the impact of the process of building renovation, restoration, and reuse while respecting the building integrity and levels of protection. It is important to teach architecture undergraduates how to conduct **POE**s, to establish **POE** as part of professional practice so architects can respond creatively to different behavioural and cultural patterns, and be able to decide which design strategies and alternatives best serve building occupants.

# WHAT?

## CONTENT

**POE** is accepted by building professionals and has become standard procedure in building evaluation because of the increased need for sustainability and the desire to procure the best possible building performance. In the context of architectural heritage post-occupancy evaluation is an important tool that should be included in architecture education in different manners providing:

- theoretical knowledge: allowing students informed and a better understanding of the consequences of the decision-making process during different stages of building design and renovation process.

- practical skills: students should be introduced to multiple data collection and methods for developing and confirming insights about the performance of the building elements;

- critical discussion based on the findings as well as data collecting and reviewing methods to obtain the users' feedback on the performance of the building.

# HOW?

## METHODS

The general teaching style should be through action learning and a problem-based approach and introducing practical skills and their application.

Theoretical knowledge, implemented in lectures in labs or research centres while encouraging independent research and work as well as expanding students' knowledge in specific areas. Development of different needed practical skills including data collection methods, behavioural observation techniques, and different data analysis tools allowing insights in collected results. Buildings specific IT skills in terms of different software and usage of different platforms that allow collecting and analysing data, also critical analysis of collected data, and forming conclusions. The last-mentioned approach refers to a critical approach to collected data, providing conclusions, solutions, and reflections that should allow architects to respond to different needs of building occupants and allow them to be able to decide which design strategies and alternatives will best serve building occupants.

# WHY?

## GOALS

Students should be introduced with:

- ways to recognize the need and reason for **POE** evaluation in existing heritages cities, sites, and buildings
- multiple data collection methods (questionaries, interviews, site inspections)
- data reviewing methods - methods for developing and confirming insights about the performance of the building
- critical discussion based on the findings
- knowing what existing data is available is important, and so is deciding whether you'll be using a representative sampling of users or a convenience sample

After completing the course, students should be able to understand POE tools; understand how using **POE** they can comprehend and critically review various interventions in the context of architectural heritage while both meeting occupant needs and respecting building integrity and levels of protection; be aware of international and local good practice; become familiar with referent international and national organizations as well as their responsibilities and role; develop a capacity for future research and understanding of this topic.

## TEACHERS' COMPETENCIES

- specialist knowledge in both theoretical and needed technological and practical skills -theory, regulations, legislative, adequate programs and software, data analysis tools

- continuous education and professional development that also involves developing professional relationships and networks with research labs and local institutions

- Pedagogical skills - teaching theoretical knowledge and also implementation of principles on real-life examples, developing critical thinking and problem-solving approaches, and  empowering individual research to expand students knowledge

- inspiring creativity, critical thinking, and experimentation implementing of new methods and techniques into educational activities;

## COURSE TYPE

- [ ] Design Studio (DS)
- [ ] Intensive Workshop (IW)
- [x] Theory Course (TC)
- [x] Seminar (short comprehensive) (SSC)
- [x] Laboratory work (LW)
- [ ] Research Thesis (RT)
- [x] Field work (FW)
- [x] Internship Practical training (IPT)
- [ ] Other (O)

## SCALE

- [x] Construction Detailing and Interior Design Scale (XS)
- [x] Architecture: Buildings Scale (S)
- [ ] Urban Design Scale (M)
- [ ] Urban and Regional Planning Scale (L)
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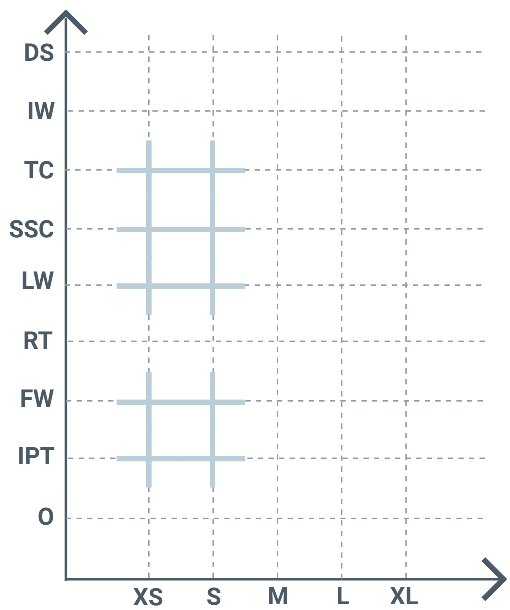


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- [ ] prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- [x] understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- [x] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- [ ] the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- [ ] the influence of history and theory on the spatial, social, and technological aspects of architecture
- [x] the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- [ ] how the theories, practices and technologies of the arts influence architectural design;
- [ ] the creative application of the fine arts and their relevance and impact on architecture;
- [ ] the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- [ ] theories of urban design and the planning of communities;
- [ ] the influence of the design and development of cities, past and present on the contemporary built environment;
- [ ] current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ■ the needs and aspirations of building users;
- □ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ■ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- □ the potential impact of building projects on existing and proposed communities.

**7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- □ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ■ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- □ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ■ principles associated with designing optimum visual, thermal and acoustic environments;
- ■ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ■ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ■ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE

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Post-occupancy evaluation has become standard practice that is included in every building design process. It is difficult to differentiate examples in practice that are specific, but there are specific uses in which this tool can be implemented. Regarding heritage buildings, post-occupancy evaluation can be used as a tool to evaluate restored buildings or areas and their new use from the users point of view. Or to express users' satisfaction with the indoor environmental behavior of the building. Methodology besides user survey involves historical research of the building, analysis of the conversion strategy, walkthrough investigation. Users are usually asked to fill questionary with predefined questions and evaluation scales that can define the level of their satisfaction regarding a certain topic. Chosen diagrams are representing the research that was conducted in an old fabric building called “La Violeta”, converted into a contemporary art and design gallery in Puebla City, Mexico.

source: [https://www.sciencedirect.com/science/article/pii/S2095263515000539](https://www.sciencedirect.com/science/article/pii/S2095263515000539)

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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# 16/19
# tools
# statements

# PETROGRAPHY

*петрографија • Petrografia • Πετρογραφία • Petrografía*

## GENERAL DEFINITION/ EXPLANATION

The term **petrography** originates from Greek *petros*- "rock" + *-graphein* "write/describe" + suffix *-ia* "quality". It indicates a science primarily concerned with the precise description and systematic classification of rocks (*i.e.* aggregates of minerals), investigating their textures-microstructures, mineralogical and chemical compositions, genesis, transformations, and physical properties. Petrography is largely based on the study of rocks in thin section by means of a polarizing microscope (an instrument that employs polarized light that vibrates in a single plane).

**Applied Petrography** is a discipline aimed to (i) study the stone and lithic materials used especially in historical and modern buildings, (ii) characterize their chemical-physical futures, (iii) understand and contrast their deterioration in natural and anthropic contexts. In fact, stone materials are subject to physical decay, chemical alteration and weathering phenomena that tend to modify their original characteristics. All these processes can be favoured and accelerated by incorrect installations and previous restoration interventions with unsuitable techniques and materials.

The scientific and methodological path concerning **applied petrography** aims to provide to students a full picture of the material and cultural conservation issues.

## WHAT?

### CONTENT

**Applied Petrography** at Iuav is a research issue investigated by the *LAMA - Laboratory for Analysing Materials of Ancient origin and LabCoMaC - Laboratory for the conservation of building materials*. LAMA currently leads research activities concerning stone and lithic materials but are also part of the design of built heritage in the field of materic valorization, conservation, and restoration of ancient monuments. The LAMA and LABCOMAC aim to conduct practical activities concerning restoration. From an educational perspective and concerning sustainability and heritage, applied petrography helps students deepen their knowledge of ancient architecture materials such as:

- the identification of the different kinds of stone and building materials as well as of their geographic provenance;
- the deterioration of stone and lithic 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 deterioration mechanisms).
- the 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.

## HOW?

### METHODS

**Applied petrography** is taught in Iuav Specialization School in Architectural and Landscape Heritage and Architecture master degree as a mandatory course.
Various emblematic cases about ancient building lithological materials alterations are presented in the lessons, relating it to the City of Venice and other architectural and archaeological contexts in the Mediterranean. Furthermore, students can develop experimental degrees and doctoral theses relating to research activities of the laboratory.
This method allows students to have a direct perception of the various issues dealt with during the course. Students can better understand buildings materials decays through their experience in the city, and the use of technical equipment used LAMA and LABCOMAC laboratory.

# WHY?

## GOALS

The aim of *Applied Petrography* in the Cultural Heritage and Sustainability educational track is to transmit to future experts the indispensable knowledge about the main physical decay and chemical weathering processes of stone and lithoid materials. This kind of knowledge and expertise allow a reasonable prediction of the behaviours and potential suitability and durability of specific materials in function of both expected environmental conditions and intended use.

Students in Master Degrees and Specialisation Schools will be able to:
- basic knowledge about the main physical decay and chemical weathering processes on historical buildings materials;
- identify the most suitable analysis methods based on the critical analysis of historical and material data they previously collected;
- interpret the data and communicate with experts and technicians using the specific terminology and methods of discourse appropriate to the field.

## TEACHERS' COMPETENCIES

Knowledge transmission about the main physical decay, chemical alteration and weathering phenomena is relevant in educational programs concerning Cultural Heritage and Built Environment Sustainability. The scientific and specialized issues should be clearly explained to help students develop basic knowledge and technical terminology.

The lessons to be effective in the transmission of cultural, theoretical, and scientific aspects should consider:
- the clear presentation of learning outcomes and outcomes verification;
- the sharing of teaching material on theoretical framework and case studies;
- the stimulation and motivation interest in the issues introduced.

To achieve a high level in learning outcomes and students comprehension of the topics, it can be helpful that the teacher is available for clarifications and explanations.

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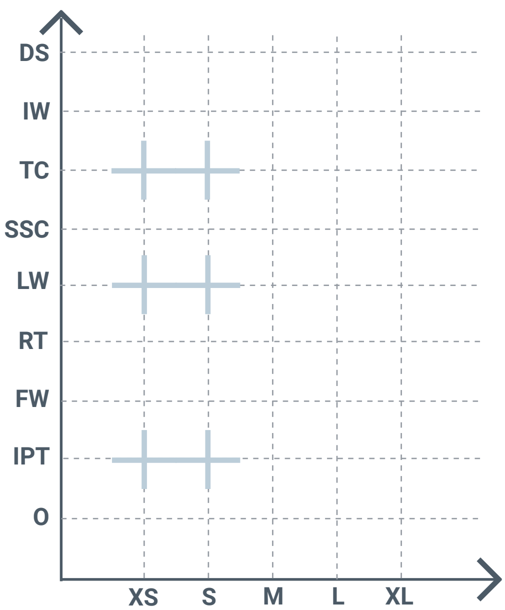


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- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## TOOL APPLICATION EXAMPLE

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Location of tool application:

- Scuola Grande di San Marco façade – petrographic and chemical analysis

Authors:

- Antonelli, F., Lazzarini, L., Cancelliere, S. & Tesser, E.

Year of the application

- 2016

The Scuola Grande di San Marco is considered one of the most important façades of Venetian buildings from the Renaissance period. It is famous for the extensive use of polychrome materials that recreate refined sculptural and painted decorations and remarkable pictorial effects. The restoration work of the façade was completed in 2004. It was preceded by a series of investigations from different experts and professionals.

The petrographic and chemical laboratory analyses results were essential to reveal the proper conservation treatments. The results were, also, important tools to understand the genesis of Venetian monuments dating between the XV and XVI Centuries.

From : Antonelli, F., Lazzarini, L., Cancelliere, S. & Tesser, E. (2016). Study of the deterioration products, gilding, and polychromy of the stones of the Scuola Grande di San Marco's façade in Venice. *STUDIES IN CONSERVATION*, 61(2).

Scuola Grande di San Marco

Study of the deterioration products, gilding, and polychromy of the stones

Antonelli, F. , Lazzarini, L. , Cancelliere S. , & Tesser, E. - (2016)

Figure 1. QR Code for more information about example.

*Source: https://www.researchgate.net/profile/Fabrizio-Antonelli/publication/277586901_Study_of_the_deterioration_products_gilding_and_polychromy_of_the_stones_of_the_Scuola_Grande_Di_San_Marco%27s_facade_in_Venice/links/5829ead108ae138f1bf2fa13/Study-of-the-deterioration-products-gilding-and-polychromy-of-the-stones-of-the-Scuola-Grande-Di-San-Marcos-facade-in-Venice.pdf*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Marco Chiuso

17/19

**tools**

statements

# CONSERVATION STATUS EVALUATION

*процена статуса очуваности • Valutazione dello Stato Conservativo • Αξιολόγηση κατάστασης διατήρησης • Evaluación del Estado de Conservación*

## GENERAL DEFINITION/ EXPLANATION

The **Conservation Status Evaluation** is a central tool in the built environment's sustainable conservation, reconstruction, and transformation process. The Evaluation action is central in the Conservation process, and it involves the knowledge activities of the building and the relation with the environmental, cultural and social context.

The **Conservation Status Evaluation** should be obtained by a scientific approach to the building and codified. The Italian Law "*DPCM 9 febbraio 2011 - Valutazione e riduzione del rischio sismico del patrimonio culturale con riferimento alle norme tecniche per le costruzioni*" formulates a shared tool that confirms the idea that the knowledge of the artefact is the primary step in the conservation process. Consider this document **Conservation Status Evaluation** is a method regards preliminary inquiries and the executive stages of the project on the built environment. The **Conservation Status Evaluation** analysis help to deepen understanding material and constructive elements and techniques and involve the critical evaluation of these data in the tangible and intangible aspects.

# WHAT?

## CONTENT

In Architectural and Urban Design Higher Education, developing the ability to manage with the **Conservation Status Evaluation** permits students to have clearly understood causes and consequences of the conservative state of the building. The Ministry for Cultural Heritage and Activities considered the **Conservation Status Evaluation** as the primary phase of the design process, and it should consider the following activities:
- the identification phase (location, particular areas at risk, relationship with the surrounding urban context);
- the first schematic survey of the artefact and the identification of any valuable elements (fixed decorative elements, movable artistic assets);
- the geometrical survey of the building in its current state (stereometric description of the building, including cracking and deformation phenomena);
- the identification of the evolution of the factory (sequence of building transformation phases to the current state);
- the identification of the constituent elements of the resistant organism (material and constructive elements, construction techniques, construction details and connections between the elements);
- the identification of the materials (state of degradation, mechanical properties);
- knowledge of the subsoil and the foundation structures."

# HOW?

## METHODS

General teaching philosophy about **Conservation Status Evaluation** should involve, as Italian guidelines suggest, a holistic approach to integrate the different professional profiles in investigating the building and its context.

The **Conservation Status Evaluation** tools constantly change and evolve. However, the methods acquired during the educational path regarding the **Conservation Status Evaluation** are central to understanding the built environment and historical buildings and conserving it with a sustainable attitude in environmental, economic, and social aspects.

Technical and practical activities help students understand methodologies for critical evaluation of material and constructive elements, construction techniques, construction details and connections between the elements of historic buildings to design the consolidation proposal.

The learning styles should include ex-cathedra lectures, laboratory-type critics activities, workshop sessions, and seminars with invited academics and experts. Seminars and on-site visits should help students broaden case studies knowledge and train them to a multiscale and multicultural vision.

# WHY?

## GOALS

The teaching of **Conservation Status Evaluation** should increase the awareness of experts and practitioners regarding constructive and material values of historical building transformation, and consolidation and sustainability notions.

Master Degrees and Specialization Schools should aim to propose an educational track that can interface different horizons of the Conservation of the tangible and intangible Status Evaluation of buildings. The involved aspects could be:
- 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.

## TEACHERS' COMPETENCIES

Teachers should effectively transfer knowledge about **Conservation Status Evaluation** dualism (technical and cultural) to students. Teachers should consider:
- cultural and social aspects, theories and technologies that influence historical buildings and goods;
- discussion with colleagues, collaborators, and experts from different academic fields an effective tool;
- the current policy and legislation (social, environmental and economic) and the critical evaluation concerning Monumental Heritage identification and transformation;
- the relationship between theoretical knowledge and technological tools and instruments.

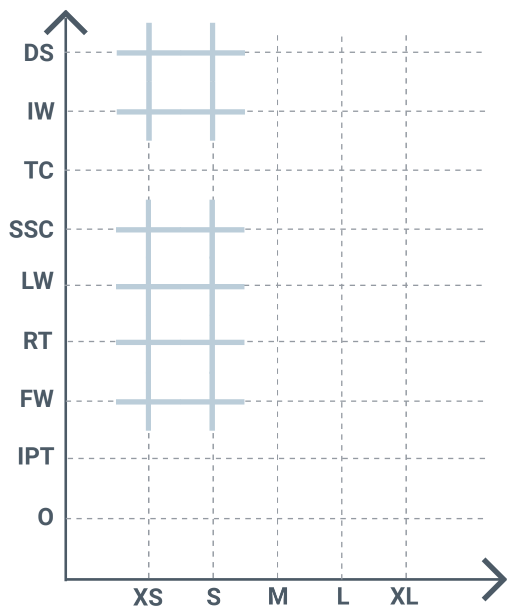
The teacher's involvement in research and laboratory activities in the fields should help make students experience the strong connection between theory, technical and constructive aspects.

## COURSE TYPE

- ■ Design Studio (DS)
- ■ Intensive Workshop (IW)
- □ Theory Course (TC)
- ■ Seminar (short comprehensive) (SSC)
- ■ Laboratory work (LW)
- ■ Research Thesis (RT)
- ■ Field work (FW)
- □ Internship Practical training (IPT)
- □ Other (O)

## SCALE

- ■ Construction Detailing and Interior Design Scale (XS)
- ■ Architecture: Buildings Scale (S)
- □ Urban Design Scale (M)
- □ Urban and Regional Planning Scale (L)
- □ Landscape Scale (XL)




## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- □ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ■ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- □ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ■ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ■ how the theories, practices and technologies of the arts influence architectural design;
- □ the creative application of the fine arts and their relevance and impact on architecture;
- □ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- □ theories of urban design and the planning of communities;
- ■ the influence of the design and development of cities, past and present on the contemporary built environment;
- □ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ☐ the impact of buildings on the environment, and the precepts of sustainable design;
- ■ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ■ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ■ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ☐ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ☐ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ■ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ■ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ■ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ■ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ■ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

■ ☐ *Checklist*

## TOOL APPLICATION EXAMPLE

Project title and location of tool application:

- Former military bakery of Santa Marta

Authors:

- IUAV STUDI E PROGETTI - [ISP] composed by:
  scientific coordinator: Marino Folin, architectural project: Massimo Carmassi with Gabriella Ioli Carmassi; consolidation project: Paolo Faccio with Paola Scaramuzza and Alvise Miozzo
  structural design: Roberto Di Marco with Gianluca Mannucci
  plant design: Mauro Strada with Andrea Crivellaro, Marco Gradizzi, Marco Dianin, Marco Donnola, Dario Turolla

Year (period) of the tool application

- 2001-2014

The Monte Sorbo Church is a medieval church in the centre of Italy. It was built in an isolated position to the main ancient roads; although this the architecture is an interesting example of reuse of Roman marble and stone spolia. The stones from ancient buildings are supposed to come from the nearby city of Sarsina. The petrographic analyses, sampled during the restoration works in 2011, included microscopic observations and the detailed minero-petrographic, isotopic and strontium analyses of the main reused architectural stone elements. The petrographic analysis recognised different lithological materials and verified the hypothesis in the previous literature.

From: Antonelli F., Santi P., Renzulli A., Santoro S. (2016): The architectural reuse of Roman marble and stone spolia in the Early Medieval Monte Sorbo church (Sarsina, central Italy). Archaeometry, 58 (3), 353-370, doi: 10.1111/arcm.12170.

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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Università Iuav
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Fabrizio Antonelli

18/19

**tools**

statements

# ARCHAEOMETRY

*археометрија • Archeometria • Αρχαιομετρία • Arqueometría*

## GENERAL DEFINITION/ EXPLANATION

The term **archaeometry** comes from *archaeos*- in Greek ancient, and, -*metron* from Greek measure and measurement. **Archaeometry** was introduced in Archeological Studies in the 1950s (first of all in England, and then in the rest of the world); it involves interdisciplinary studies made by specialists, especially of Earth Sciences, Chemical and Physic, through technical and laboratory equipments applied to fix archaeological and historic-artistic issues related to the science of ancient raw materials. **Archaeometry** applies hard sciences and technical knowledge to the analysis, characterization, absolute dating and provenancing of archaeological and art-materials. It investigates the artifacts and material data of the past by using tools and methods of scientific disciplines in an interdisciplinary field of study. Achaeometric science, supported by the IT processing of large amounts of data, has provided detailed quantitative analyses which are fundamental in the reconstruction of ancient economic frameworks and archaeological contexts. In recent times, the refinement of electronic techniques and the introduction of non- destructive analyses allowed to expand the field of applications of science to art and now, in many European countries, the term **archaeometry** also includes the study and diagnostics of the totality of cultural heritage as well as of their conservation issues.

# WHAT?

## CONTENT

**Archaeometry** investigates various aspects of archaeological and historic architectural artifacts through multiple specialized scientific areas. Several sub-disciplines focus on a specific method or type of material, geographical or chronological focus, or other thematic concerns.
**Archaeometry** analysis needs specific experts and academic profiles, but the awareness of aims and tools is central in Educational programs related to Heritage Awareness and Sustainability. From an educational perspective and concerning sustainability and heritage, **archaeometry** helps students deepen their knowledge of architecture materials, their geographical provenance (far or near the site) and chronological issues.

# HOW?

## METHODS

**Archaeometry** teaching proposal in Architectural and Urban Design Higher Education programs involves theoretical and practical frameworks. An interdisciplinary approach to Cultural Heritage and Built Environment helps students get involved in scientific aspects of archaeological artefacts and architectural materials. The teaching method can integrate ex-cathedra presentations from the teacher, laboratory activities, and explanations of texts and media used. Ex-cathedra presentation of various emblematic cases of study allows students to understand the relationship between the scientific survey and archaeological or architectural materials. Laboratory activities allow students to have a direct perception of the various issues dealt with during the course. Explanation of texts and media used in the course encourages students to grasp and respond to the learning process reflectively. The teacher should assist the student in the educational path and provide meaningful content, including the textbook, PowerPoint presentations, websites, lecture notes, outlines, and multimedia.

# WHY?
## GOALS

Architectural and Urban Design on Cultural Heritage is considered a process in which survey, documentation, critical-historical interpretation and scientific analysis and diagnosis play a central role.

Students in Master Degrees and Specialisation Schools educational track will acquire the basic knowledge about the main **archaeometry** tools and methods.

They will be able to:
- basic knowledge about the main **archaeometry** tools and analysis on historical buildings materials;
- identify the most suitable analysis methods based on the critical analysis of historical and material data they previously collected;
- interpretate the data and communicate with experts and technicians using the specialized terminology and methods of discourse appropriate to the field.

## TEACHERS' COMPETENCIES

Knowledge transmission about **archaeometry** in educational programs concerning Cultural Heritage and Built Environment Sustainability needs an interdisciplinary approach. The lessons to be effective in the transmission of cultural, theoretical, and scientifical aspects should consider:
- the clear presentation of learning outcomes and outcomes verification;
- the sharing of teaching material on **archaeometry** theoretical framework and case studies;
- the stimulation and motivation interest in the issues introduced.

To achieve a high level in learning outcomes and students comprehension of the topics, it can be helpful that the teacher is available for clarifications and explanations.

## COURSE TYPE

- [ ] Design Studio (DS)
- [ ] Intensive Workshop (IW)
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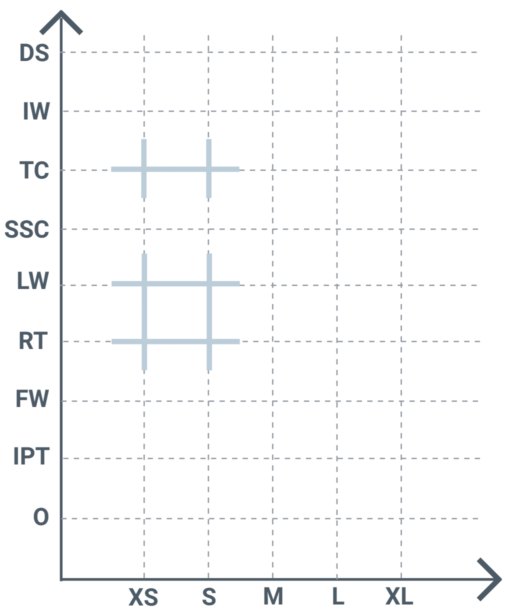


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

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- [ ] develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

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- [ ] the influence of history and theory on the spatial, social, and technological aspects of architecture
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- ■ the impact of buildings on the environment, and the precepts of sustainable design;
- □ the way in which buildings fit into their local context.

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- □ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ■ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- □ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## TOOL APPLICATION EXAMPLE

Location of tool application:

- Monte Sorbo Church – multi-method archaeometric study

Authors:

- Antonelli F., Santi P., Renzulli A., Santoro S.

Year of the application

- 2016

The Monte Sorbo Church is a medieval church in the centre of Italy. It was built in an isolated position to the main ancient roads; although this the architecture is an interesting example of reuse of Roman marble and stone spolia. The stones from ancient buildings are supposed to come from the nearby city of Sarsina. The petrographic analyses, sampled during the restoration works in 2011, included microscopic observations and the detailed minero-petrographic, isotopic and strontium analyses of the main reused architectural stone elements. The petrographic analysis recognised different lithological materials and verified the hypothesis in the previous literature.

From: Antonelli F., Santi P., Renzulli A., Santoro S. (2016): The architectural reuse of Roman marble and stone spolia in the Early Medieval Monte Sorbo church (Sarsina, central Italy). Archaeometry, 58 (3), 353-370, doi: 10.1111/arcm.12170.

Early Medieval Monte Sorbo Church

multi-method archaeometric study
of Roman marble and stone *spolia*

Antonelli F., Santi P., Renzulli A., Santoro S.
(2016)

Figure 1. QR Code for more information about example.
*Source: https://www.researchgate.net/publication/275837180_The_Architectural_Reuse_of_Roman_Marble_and_Stone_Spolia_in_the_Early_Medieval_Monte_Sorbo_Church_Sarsina_Central_Italy*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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19/19

**tools**

statements

# DIGITIZATION OF HERITAGE

*дигитализација наслеђа • Digital Humanities • Ψηφιοποίηση Πολιτιστικής Κληρονομιάς • Digitalización del Patrimonio*

## GENERAL DEFINITION/ EXPLANATION

**Digitization of heritage** is the action of using digital media in the service for the understanding, documentation and preservation of cultural or natural heritage. The main idea of the digitisation of cultural heritage is the transformation of a material object into a virtual copy.
**Digitization of heritage** pertains to a) the creation of information databases on the history, current conditions and status of heritage; b) the creation of digital 3d models representing built heritage, c) the creation of digital proposals for the restoration of heritage etc.

Benefits derived from digital databases and models:
a) The databases offer an immediate benefit to understanding and evaluating heritage
b) The digital models are offering a new way of preserving heritage (virtually)
c) The digitization of cultural heritage serves to enable the permanent access to art work ranging from literature to paintings (including all aspects of intangible and tangible heritage – buildings, sites, beliefs, art and crafts etc).
d) The digitization opens up new ways of enjoying cultural content.
The Charter on the Preservation of Digital Heritage of UNESCO defines digital heritage as embracing "cultural, educational, scientific and administrative resources, as well as technical, legal, medical and other kinds of information created digitally, or converted into digital form from existing analogue resources".

The **Digitization of heritage** has significance in disciplinary professional terms (by offering new tools to architectural history, architectural design, etc); and it also contributes to the society (preservation of memory, cultural enrichment etc). Generally, the **digitization of heritage** makes culture and heritage more accessible.

# WHAT?

## CONTENT

**Digitization of heritage** is not a simple matter of collecting and digitizing information. It has to be guided by rigorous methods of assessing what info to collect and digitize, and also methods that ensure the precision and accountability of the digitization. (for example: there can be conflicting information or contested histories; consequently, the selection of what to digitize needs to account for the multiplicity of histories, the diversity of opinions, etc)

**Digitization of heritage** include:
1. Digitization of heritage that was never built (eg Boule's drawings)
2. Digitization of heritage that no longer exist (eg Crystal Palace)
3. Digitization of built heritage that was destroyed.
4. Digitization of existing tangible (existing heritage building surveying etc) and intangible heritage (through archives, questionnaires etc)
5. Digitization of 3D documentation showing holistic views of heritage
6. Digitization of 3D proposals for the restoration of heritage buildings and objects

The above-mentioned specific aspects of heritage digitization (1 and 2) help enlarge the scope of built heritage. In addition, their virtual recreation, as opposed to their physical, could be seen as resolving issues of sustainability. They can also help save heritage from complete eradication (3), and can have social benefits (preservation of memory, resolution of conflict) and a sustainable significance. At the same time the digitization can contribute towards the preservation of heritage (5 and 6).
Students, through the learning process in courses related to the **digitization of heritage** will acquire fundamental and specialized knowledge of recording and documenting objects, buildings and building sites through the use of contemporary digital methods. Such courses introduce technologies that address issues of spatial organization, morphology and construction of buildings and building sites as well as their 3D representation and documentation in the digital environment.

# HOW?

## METHODS

Teaching in the area of **digitization of heritage** often includes lectures on multiple case studies around the world with critical analyses of readings that expose the potentials and the problems of each case of digitization. Furthermore, teaching covers advance comparative perspective on digitization practices and how they impact on heritage and sustainability. This involves "Critical thinking", "Critical Evaluation of Cultural Heritage", and "Sustainability Analysis" from an interdisciplinary perspective. On the other hand, some courses on digitization focus more on practical techniques and equipment of digitization through survey and in situ documentation.

Learning methods

- Lecture, seminar discussion, critical reading of problems vs. Best practices;
- Site visits to local cases and hands on experience with issues of what to digitize, what oral histories exist on site, etc
- Preparation of projects with the use of digitization tools for documentation
- Digital innovative surveying techniques, such as terrestrial laser scanning, photogrammetry that are widely employed for the purpose of documenting heritage buildings.
- Use of contemporary equipment such as 3d-scanner, drones, 3d-printers etc

The learning environment combines learner-centred and knowledge-centred methods, but also reaches out to assess specific situations in the community

# WHY?

## GOALS

Teaching courses related to digitization of cultural heritage is importan today, as digitisation of cultural heritage can be a crucial tool in today's efforts towards the conservation, renovation, study, sustainable development and promotion of European cultural resources. Cultural heritage organisations are joining forces and adopting new technologies to preserve and share information about heritage.
Some courses related to practical aspects of digitization aim at introducing research tools and methodological approaches of in-situ recording and documenting of buildings and urban sites, as well as individual structural and morphological building elements, while they include methodologies for the classification, evaluation and processing of monitoring data.
Visualisation and 3D digital representations of built heritage are used not only in conservation, renovation or retrofit construction operations, but are also employed for educational purposes in academia and the GLAM industry, including digital museums and open access digital repositories. It should be mention that GLAM is an acronym for "galleries, libraries, archives, and museums", and refers to cultural institutions with a mission to provide access to knowledge. GLAMs collect and maintain cultural heritage materials in the public interest.
Some of the aims of courses related to digitization are:
- Acquiring critical thinking on matters of digitation and methods of assessing what information to collect and digitize as well as methods that ensure the precision and accountability of the digitization.
- Acquiring background knowledge and developing tools for in-situ recording of building blocks, buildings and structures (contemporary digital measuring instruments).
- Development of a methodology for the study of details of individual constructions with special equipment.
- Acquiring knowledge to record damage and alterations in constructions as well as processing and evaluating the data.
- Deepening in issues of digital processes for recording and documenting buildings and building sites.

In particular, the students will be able to understand and investigate advanced computational/digital mechanisms and technologies such as 3D scanning, 3D modelling, etc. In addition theoretical courses related to digitization lead to critical thinking and evaluation of the data’s importance in a digital form in various databases and archives.

## TEACHERS' COMPETENCIES

A teacher in order to effectively transfer knowledge about **digitization of heritage** should:
- combine practical and theoretical knowledge and experience in the field of digitization and heritage (critical thinking and practical aspects).
- have in depth knowledge of historical and historiograhic methods
- have knowledge of the history of specific heritage projects
- have knowledge of the principles and techniques of digitization
- know the use of contemporary equipment in the digital documentation of heritage (3D-scanner, drones etc)
- effectively communicate with other professionals related to this field
- be able to cooperate with other related professionals
- be engaged in the study of heritage and digitization and be able to transfer her/his enthusiasm to students
- be familiar with contemporary trends towards the digitization of cultural heritage

The combination of practical with theoretical knowledge in order to transfer knowledge effectively to the students was underlined in the IO2 Questionnaires.

## COURSE TYPE

- ☐ Design Studio (DS)
- ■ Intensive Workshop (IW)
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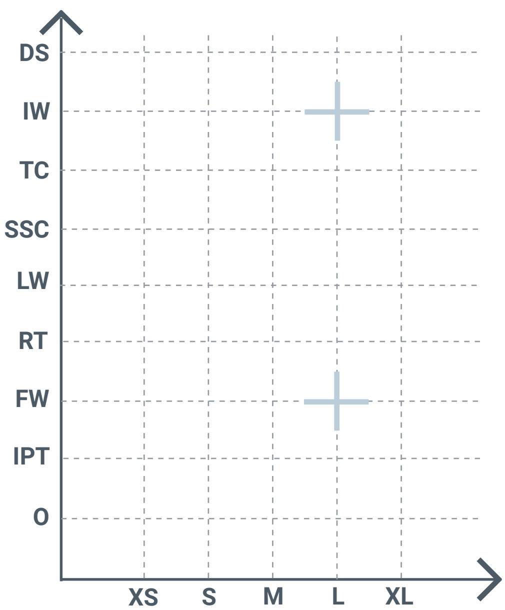


## LEARNING OUTCOMES

**1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:**

- ■ prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- ■ understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- ☐ develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

**2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:**

- ■ the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- ☐ the influence of history and theory on the spatial, social, and technological aspects of architecture
- ☐ the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

**3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:**

- ☐ how the theories, practices and technologies of the arts influence architectural design;
- ☐ the creative application of the fine arts and their relevance and impact on architecture;
- ☐ the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

**4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:**

- ☐ theories of urban design and the planning of communities;
- ☐ the influence of the design and development of cities, past and present on the contemporary built environment;
- ☐ current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

**5** **Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:**

- ☐ the needs and aspirations of building users;
- ☐ the impact of buildings on the environment, and the precepts of sustainable design;
- ☐ the way in which buildings fit into their local context.

**6** **Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:**

- ☐ the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- ☐ the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- ☐ the potential impact of building projects on existing and proposed communities.

**7** **Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:**

- ☐ the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- ☐ the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- ☐ the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

**8** **Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:**

- ■ the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- ■ strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- ☐ the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

**9** **Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:**

- ☐ principles associated with designing optimum visual, thermal and acoustic environments;
- ☐ systems for environmental comfort realised within relevant precepts of sustainable design;
- ☐ strategies for building services, and ability to integrate these in a design project.

**10** **The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:**

- ☐ critically examine the financial factors implied in varying building types, constructional systems, and specification
- ☐ understand the cost control mechanisms which operate during the development of a project;
- ☐ prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

**11** **Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:**

- ☐ the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- ☐ the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- ☐ the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

## TOOL APPLICATION EXAMPLE

In the vernarch database many different types of information have been imported including survey maps, topographical plans, photographs, texts, papers as well as brief essays and projects. The aim of this effort is the creation of a comprehensive database with the inclusion of

a) architectural and town planning elements of the traditional settlements
b) environmental comfort conditions (temperature, relative humidity, direction of the wind) and
c) social and economic data (population elements etc) as well as
d) the protection status of each traditional dwelling (listed buildings etc).

This data includes all the traditional settlements of the island and a large number of traditional dwellings in the form of index cards (up to 10,000), many land survey maps of traditional settlements and the state census records (from 1881-2011) of more than 600 settlements of the island (either inhabitant or abandoned). The database is divided into two main categories – information for settlements and information for dwellings.

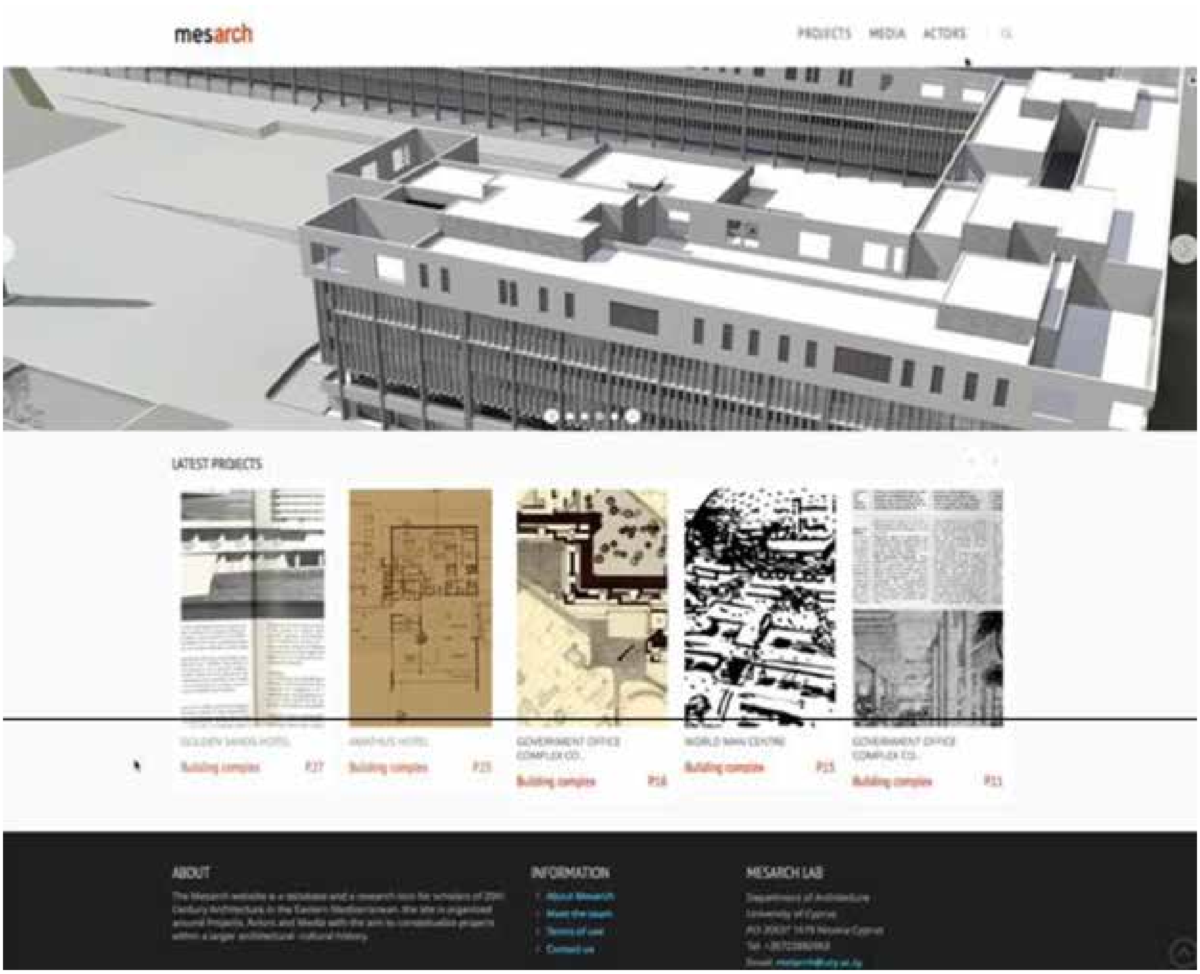


Figure 1.Snapshots from the 'Mesarch digital research tool' a database on modern architectural heritage developed at UCY
*Source: Mesearch website*

## RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH

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[1] Bonacchi, Chiara; Krzyzanska, Marta (2019-12-02). "Digital heritage research re-theorised: ontologies and epistemologies in a world of big data". International Journal of Heritage Studies. 25 (12): 1235–1247. doi:10.1080/13527258.2019.1578989. hdl:1893/28734

[2] Fiona Cameron; Sarah Kenderdine, eds. (2007). Theorizing Digital Cultural Heritage: A Critical Discourse. MIT Press. ISBN 978-0-262-03353-4.

[3] Ioannides, M., Fellner, D., Georgopoulos, A., Hadjimitsis, D. G., Digital Heritage: Third International Euro-Mediterranean Conference. Springer: Berlin, 2010.

[4] Nodaraki, M., Michael, A., Pyla P. and Philokyprou, M. 2021 “Creating an inventory of Modern architectural heritage in Cyprus”, Brau5, Beinnial of Architectural and Urban Restoration, Nicosia, 24 April 2021,

[5] Philokyprou, M. 2014 “The VernArch Digital Database Project: Documentation and Protection of the Vernacular Architecture of Cyprus”, Proceedings of the International Conference on Cultural Heritage. Digital Heritage. Progress in Cultural Heritage Documentation, Preservation and Protection (Euromed 2014), Limassol, Cyprus, 3-8 November 2014, pp. 635-642.

[6] Phokaides, Petros, and Panayiota Pyla P. “Critical Historiography and Digital Documentation Tools: Potential for Enhancing Research in Modern Architecture.” In The Return of the Modern: 25 Years of Greek Docomomo, edited by Athanasiou A., Dima L., Karali T., 107-121. Athens: Futura, 2018. [In Greek]

[7] Phokaides, Petros, Panayiotis Andreou, George Antoniou, Panayiota Pyla, and George Samaras. “Architectural Historiography and Database Design: An Alliance to Empower Research in Modern Heritage.” Biocultural 2015: Sustainability in Architectural Cultural Heritage, (2016): 267-276.

[8] Remondino, F., 2011. Heritage Recording and 3D Modeling with Photogrammetry and 3D Scanning. Remote Sensing, 3(6), pp. 1104-1138.

[9] Steven Wan Pok Wu and Herminia Wei-hsin Din Digital Heritage And Culture: Strategy And Implementation "Charter on the Preservation of Digital Heritage". UNESCO. October 15, 2003. Retrieved July 9, 2015.

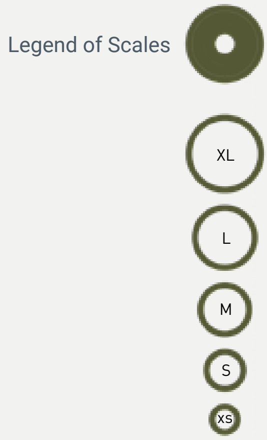


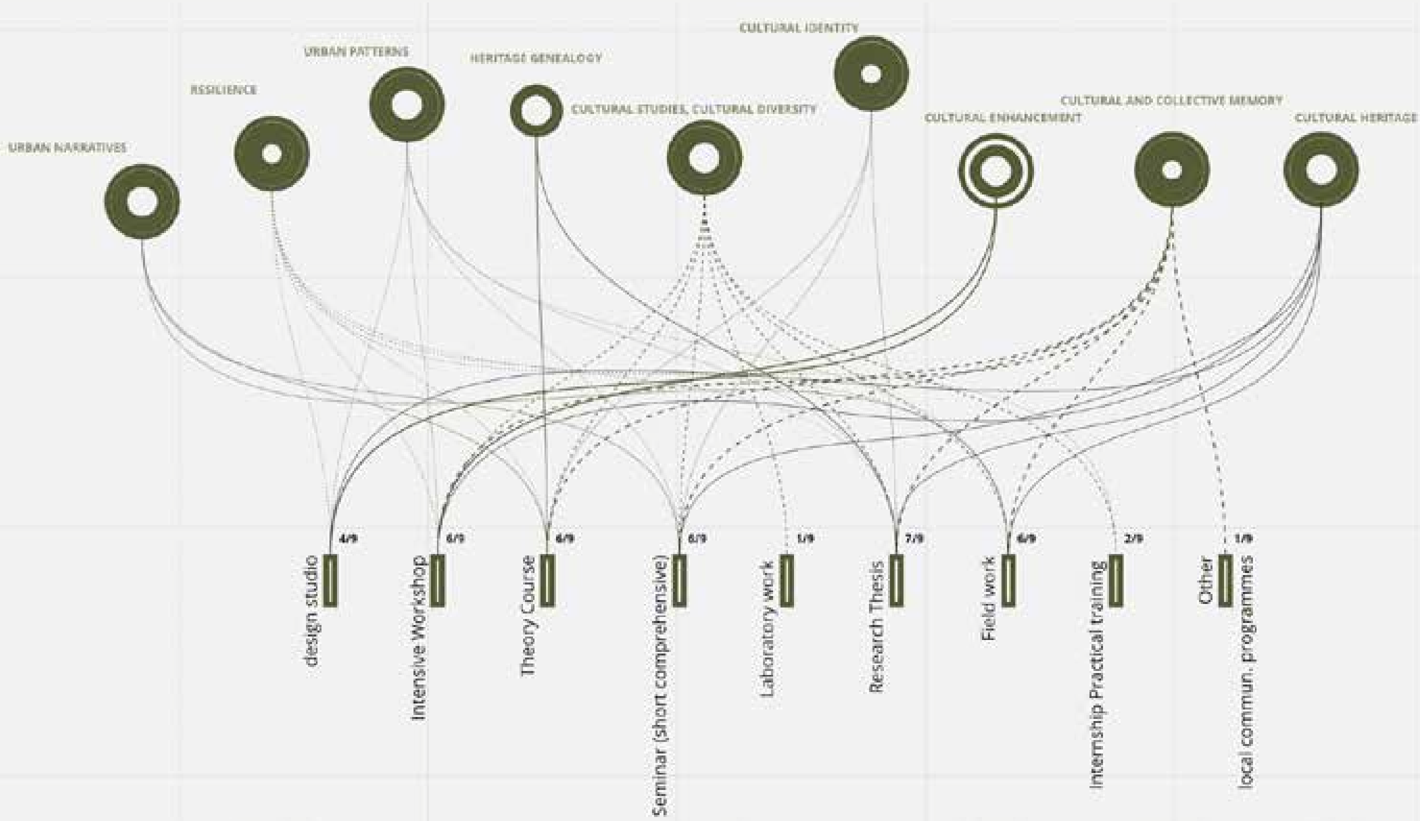
Figure 2. ScreenShots from the vernarch website (digital database of vernacular architecture)
*Source: www.vernarch.ac.cy*

# CONCLUSIONS

# NOTIONS

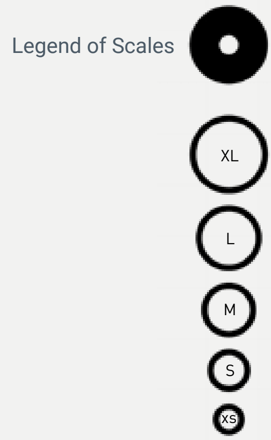
When dealing with notions in relation to sustainabililty and heritage, it is possible to conclude that:
- Due to their complexity, most suitable courses where notions should be addressed are Intensive workshops, Theory courses, Seminars, Research Thesis and Field Work.
- Laboratory Work and Practical Training are not the most adequate ways to provide environment for the understanding of notions.
- Most of the notions cover all five scales, and consequently, the multiscale approach is key for an integral understanding.

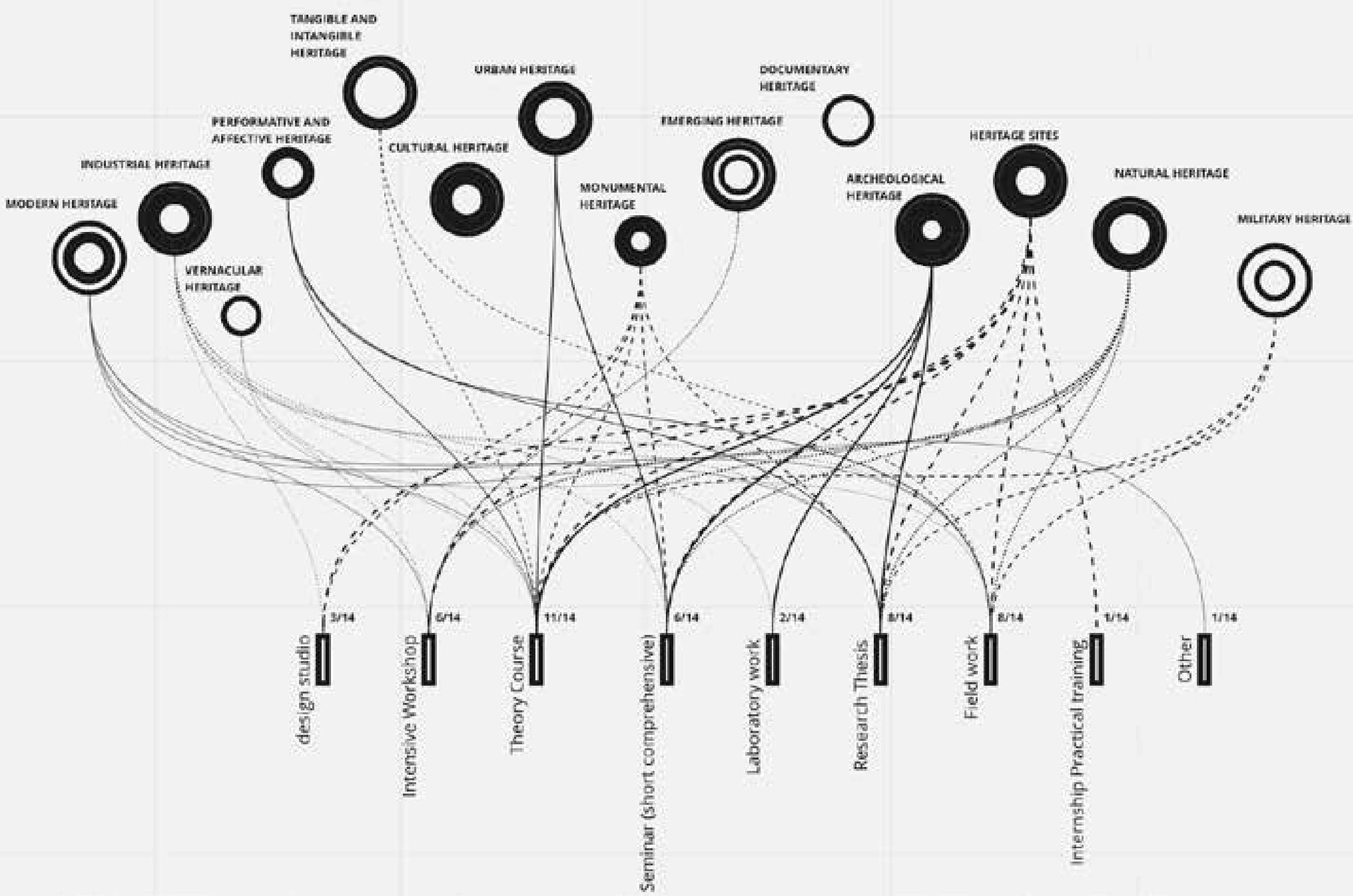


# HERITAGE TYPES

In regards to Heritage types that aquire adequate care when talking about sustainability , it is possible to conclude that:
- Theory Course and Research Thesis are the most are the most common frameworks in which different types of heritage are taught
- It is possible to perceive that not all heritage types are practiced through design studio, which needs to be reconsidered
- There is a lack of heritage types on the Construction Detailing and Interior Design Scale (XS), as well as on the Urban and Regional Planning Scale (L).

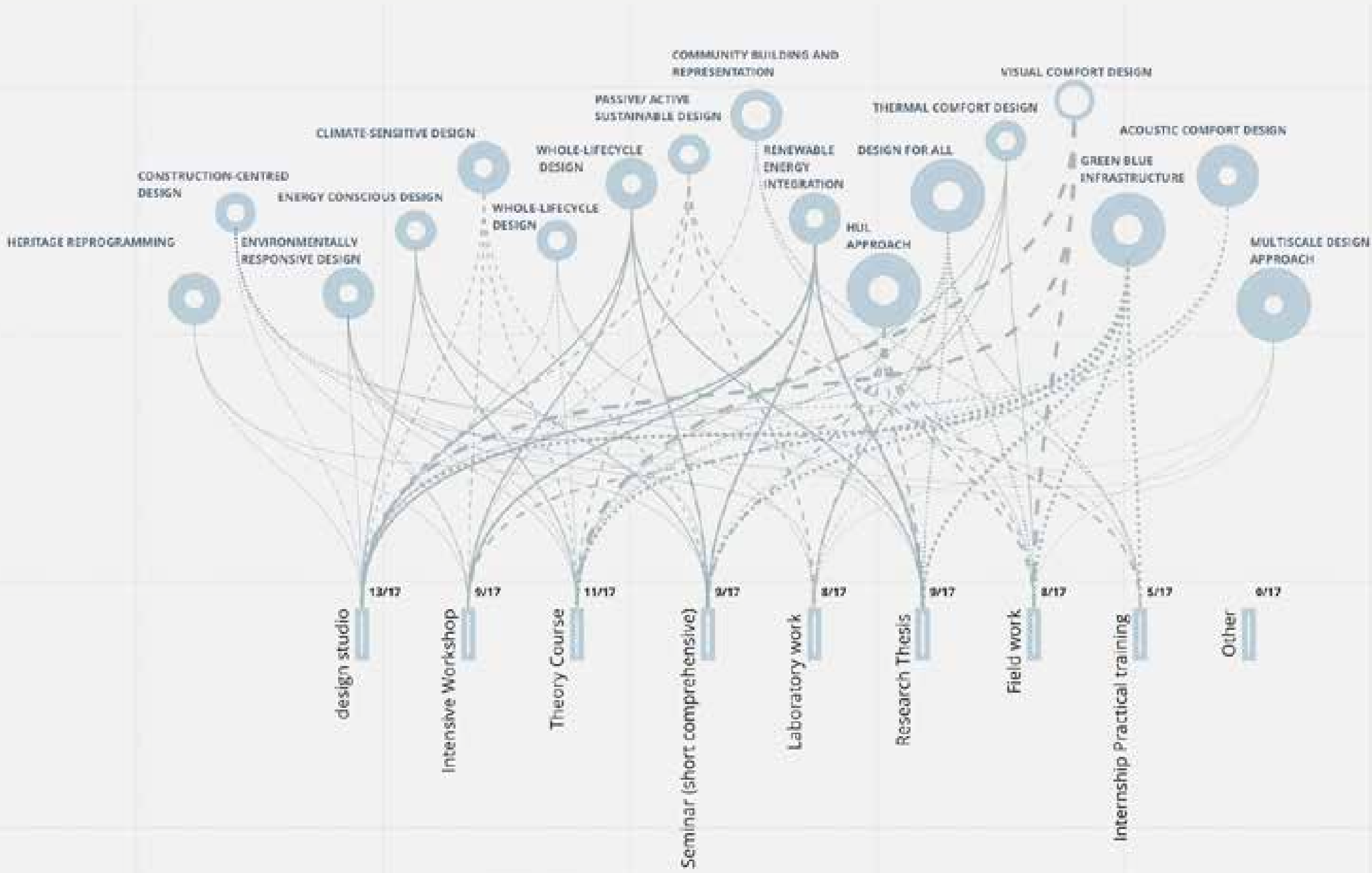


# DESIGN APPROACHES

Analysis of design approaches applied when dealing with sustainabililty and heritage, reveal the following conlussions:
- Design approaches are almost equally represented in Design studio and Theory Courses, and can be practiced during Intensive Workshop, or any other recognized course type as a part of a wider course
- Most of the existing sustainable design approaches are focused on the scales of Construction Detailing and Interior Design Scale (XS) where not much heritage types are recognized, and on an Architecture: Buildings Scale (S). Accordingly, there are not many existing design approaches on Landscape Scale (L) within which the need  for sustainable treatment of heritage constantly grows.

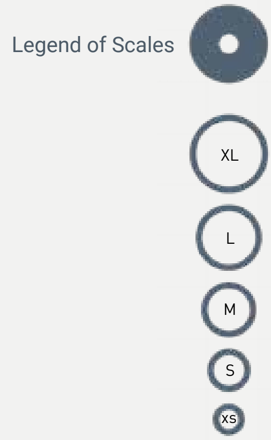
Legend of Scales

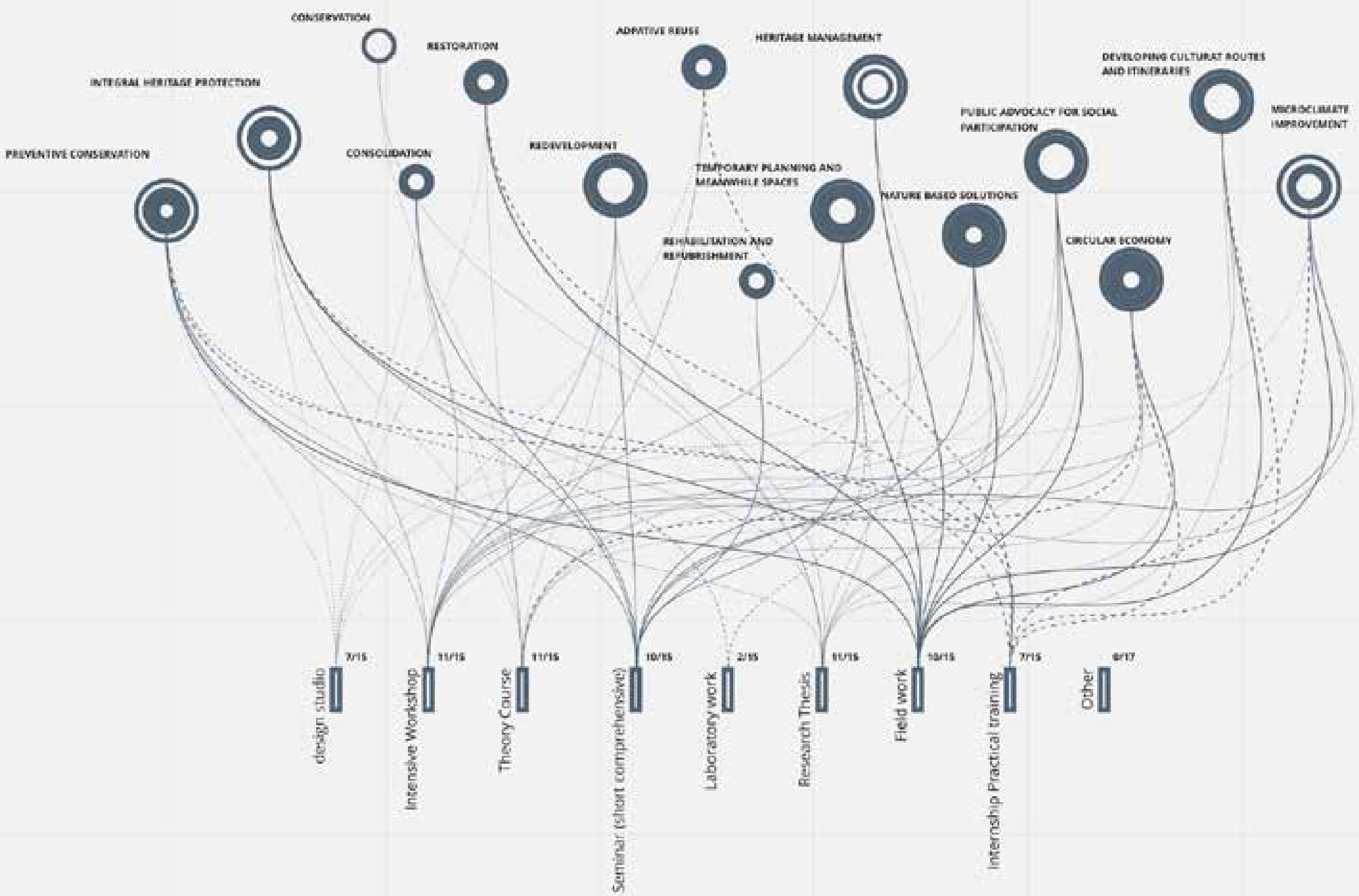



# DESIGN ACTIONS

When thinking about design actions regarding sustainabililty and heritage, it is possible to conclude:

- Due to their diversity, Intensive workshops, Theory courses, Seminars, Research Thesis and Field Work are environments that enable adequate teaching of design actions.
- Internship Practical training (IPT) reveals as an important for dealing with desing actions.
- Design actions cover all five scales, with notable specialization of specific actions to one to two scales.



# TOOLS

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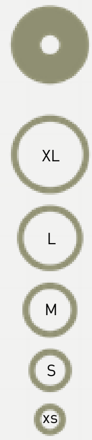
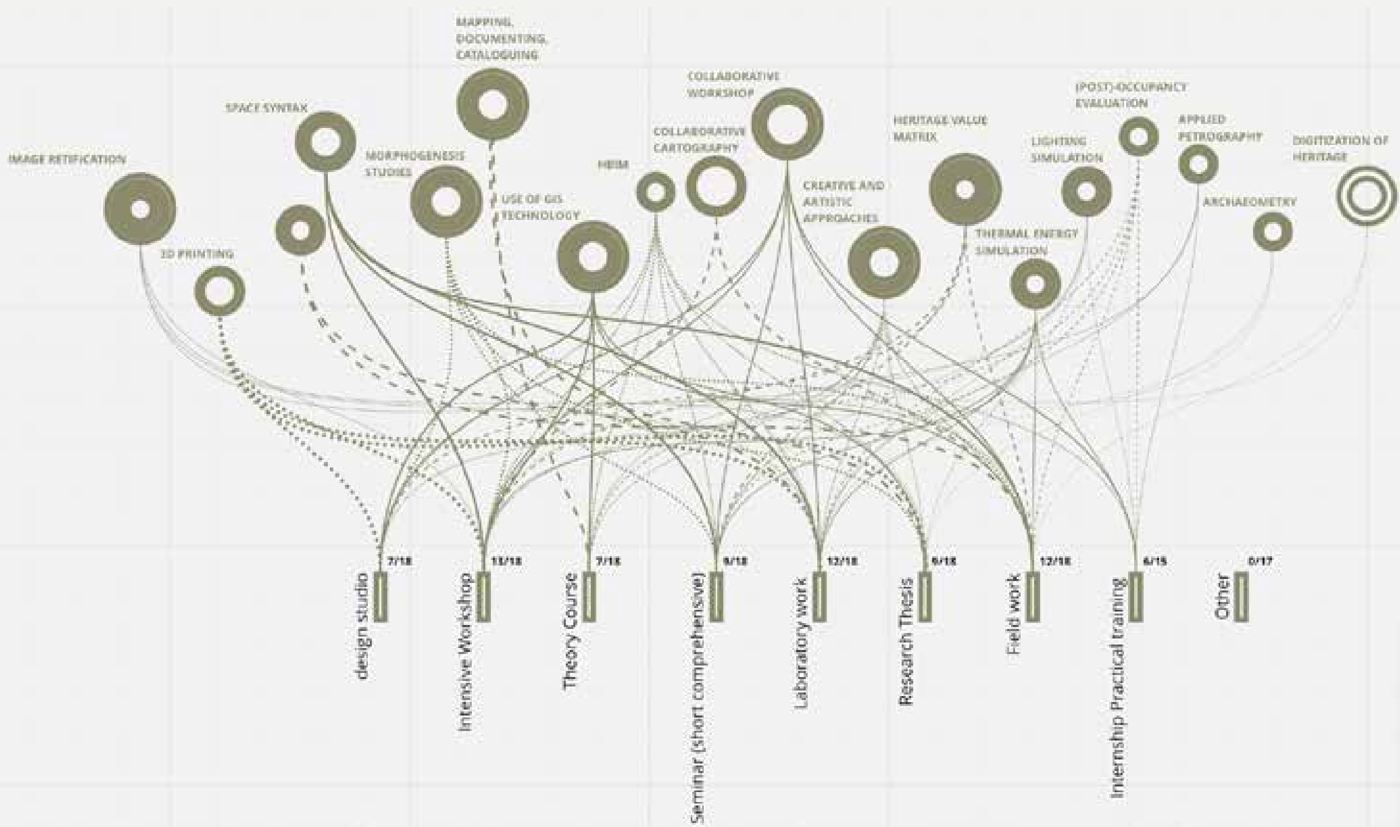
When thinking about tools that enable research and design in relation to sustainabililty and heritage, it is possible to conclude that:

- Due to their specific nature, for most of the tools the organization of Intensive Workshop, Laboratory and Field Work is necessary.
- The coverage of scale with different tools is notable, but it needs to be highlighted that most of the tools are developed for the scales of  Construction Detailing and Interior Design Scale (XS), and Architecture: Buildings Scale (S)

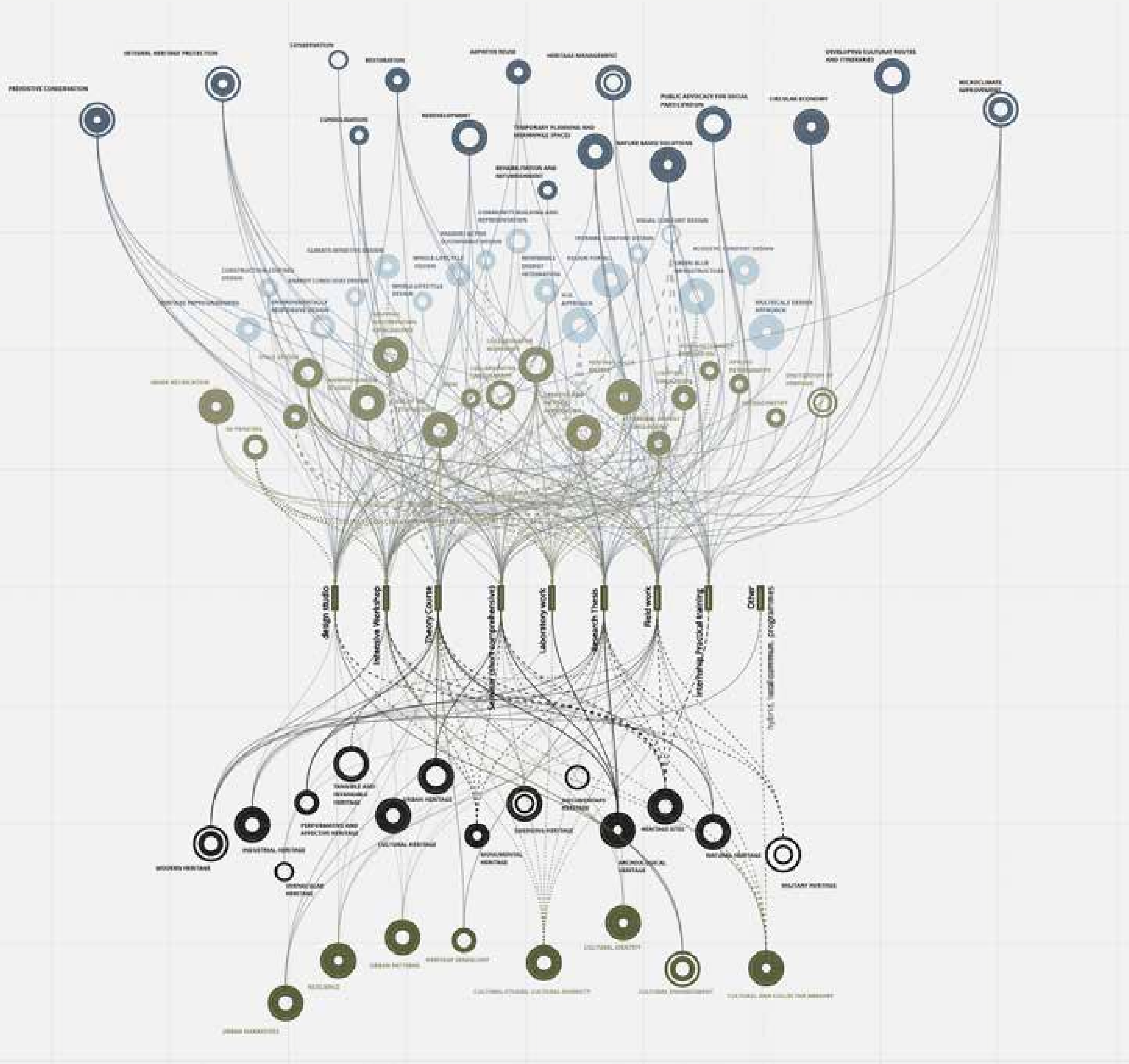
Legend of Scales



## SYNTHESIS

This output is the primary input for the development of "Book of courses" which will be developed by the academic institutions as a part of the project (IO5). It will be presented in the form of a pedagogical strategy that combines different terms (notions, heritage types, design actions, design approaches and tools), transcends single scale and provides innovative approaches to design and development of different course types. Therefore, the synthesis diagram provides valuable input for visual educational landscape that will be created by HERSUS partners.


PREVENTIVE CONSERVATION
CONSERVATION
RESTORATION
ADAPTIVE REUSE
HERITAGE MANAGEMENT
DEVELOPING CULTURAL ROUTES AND ITINERARIES
MICROCLIMATE IMPROVEMENT
CONSOLIDATION
REDEVELOPMENT
PUBLIC ADVOCACY FOR SOCIAL PARTICIPATION
CIRCULAR ECONOMY
NATURE BASED SOLUTIONS
design studio
Intensive Workshop
Theory Course
Laboratory work
Research Thesis
Field work
Internship/Practical training
Other
TANGIBLE AND INTANGIBLE HERITAGE
URBAN HERITAGE
PERFORMATIVE AND AFFECTIVE HERITAGE
CULTURAL HERITAGE
INDUSTRIAL HERITAGE
MODERN HERITAGE
VERNACULAR HERITAGE
MONUMENTAL HERITAGE
HERITAGE SITES
ARCHAEOLOGICAL HERITAGE
NATURAL HERITAGE
MILITARY HERITAGE
CULTURAL IDENTITY
URBAN PATTERNS
RESILIENCE
CULTURAL ENVIRONMENT
CULTURAL AND COLLECTIVE MEMORY
URBAN NARRATIVES

HERSUS