



Study Plan

School: School of Arts
Degree: Integrated Master
Course: Architecture (cód. 209)

1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2502I	Architecture Design Studio I	Architecture	12	Semester	312
VIS2503I	Introduction to Drawing I	Visual Arts	6	Semester	156
ARQ2504I	Descriptive Geometry I	Architecture	3	Semester	78
ARQ2505I	Construction I	Architecture	3	Semester	78
ARQ2506I	Classic and Middle Age Architecture	Architecture	3	Semester	78
ARQ2507I	Space Organization	Architecture	3	Semester	78

1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2508I	Architecture Design Studio II	Architecture	12	Semester	312
VIS2509I	Introduction to Drawing II	Visual Arts	6	Semester	156
ARQ2510I	Descriptive Geometry II	Architecture	3	Semester	78
ARQ2511I	Construction II	Architecture	3	Semester	78
ARQ2512I	Renaissance and Baroque Architecture	Architecture	3	Semester	78
SOC2513I	Anthropology of Space	Anthropology	3	Semester	78

2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2514I	Project III	Architecture	12	Semester	312
ARQ2515I	Architectural Drawing I	Architecture	6	Semester	156
ARQ2516I	Digital Representation I	Architecture	3	Semester	78
ARQ2517I	Construction III	Architecture	3	Semester	78
ARQ2518I	History of the XIX Architecture	Architecture	3	Semester	78
GEO2519I	Geography and Territory	Geography	3	Semester	78

2nd Year - 4th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2520I	Architecture Design Studio IV	Architecture	12	Semester	312
ARQ2521I	Architectural Drawing II	Architecture	6	Semester	156
ARQ2522I	Digital Representation II	Architecture	3	Semester	78
ARQ2523I	Construction IV	Architecture	3	Semester	78
ARQ2524I	History of the XX Architecture	Architecture	3	Semester	78
PAO2525I	Landscape Studies	Landscape Arts and Techniques	3	Semester	78

3rd Year - 5th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2526I	Architecture Design Studio V	Architecture	12	Semester	312
ARQ2527I	Architectural Drawing III	Architecture	6	Semester	156
ARQ2528I	Digital Representation III	Architecture	3	Semester	78
ARQ2529I	Structures I	Civil Engineering	3	Semester	78
ARQ2530I	Architecture Theory I	Architecture	3	Semester	78
ARQ2531I	Urban and Territorial Design I	Architecture	3	Semester	78



3rd Year - 6th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2532I	Architecture Design Studio VI	Architecture	12	Semester	312
ARQ2533I	Architectural Drawing IV	Architecture	6	Semester	156
ARQ2534I	Digital Representation IV	Architecture	3	Semester	78
ARQ2535I	Structures II	Civil Engineering	3	Semester	78
ARQ2536I	Architecture Theory II	Architecture	3	Semester	78
ARQ2537I	Urban and Territorial Design II	Architecture	3	Semester	78

4th Year - 7th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2538I	Advanced Architecture Design Studio I	Architecture	12	Semester	312
ARQ2539I	Construction Technology I	Architecture	3	Semester	78
ARQ2540I	Research Methodology I	Architecture	6	Semester	156

Group of Options

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2541I	Introduction To Islamic Architecture And To The Maghrebian Space	Architecture	3	Semester	78
ARQ2542I	Portuguese Architecture	Architecture	3	Semester	78
VIS2543I	Fundamentals of Photography	Visual Arts	3	Semester	78
ARQ2544I	Sustainable Construction	Civil Engineering	6	Semester	156
GEO0772L	Urban Space	Geography	6	Semester	156

4th Year - 8th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2545I	Advanced Architecture Design Studio II	Architecture	12	Semester	312
ARQ2546I	Construction Technology II	Architecture	3	Semester	78
ARQ2547I	Research Methodology II	Architecture	6	Semester	156

Group of Options

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2548I	Travel Notebooks	Architecture	3	Semester	78
ARQ2549I	Intervention Methodologies in architectural Heritage	Architecture	3	Semester	78
FIL2550I	Aesthetics of Architecture	Philosophy	3	Semester	78
ARQ2551I	Yards and Safety	Civil Engineering	6	Semester	156
PAO0782L	Landscape and Countryside	Geography	6	Semester	156

5th Year - 9th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2552I	Advanced Architecture Design Studio III	Architecture	12	Semester	312
ARQ2553I	Construction Technology III	Architecture	3	Semester	78
ARQ11316I	Thesis	Architecture	30	Year	780

5th Year - 10th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ARQ2555I	Advanced Project IV	Architecture	12	Semester	312
ARQ2556I	Construction Technology IV	Architecture	3	Semester	78



Conditions for obtaining the Degree:

*** TRANSLATE ME: Arquitetura

Para obtenção do grau de licenciado em Cultura Arquitetónica é necessário obter aprovação a 180 ECTS em unidades curriculares obrigatórias, distribuídas da seguinte forma:

1º Ano

1º Semestre:

6 UC Obrigatórias num total de 30 ECTS

2º Semestre

6 UC Obrigatórias num total de 30 ECTS

2º Ano

3º Semestre

6 UC Obrigatórias num total de 30 ECTS

4º Semestre

6 UC Obrigatórias num total de 30 ECTS

3º Ano

5º Semestre

6 UC Obrigatórias num total de 30 ECTS

6º Semestre

6 UC Obrigatórias num total de 30 ECTS

Para obtenção do grau de Mestre em Arquitetura é necessário obter aprovação a 282 ECTS em unidades curriculares obrigatórias e 18 ECTS em unidades curriculares optativas, distribuídas da seguinte forma:

1º Ano

1º Semestre:

6 UC Obrigatórias num total de 30 ECTS

2º Semestre

6 UC Obrigatórias num total de 30 ECTS

2º Ano

3º Semestre

6 UC Obrigatórias num total de 30 ECTS

4º Semestre

6 UC Obrigatórias num total de 30 ECTS

3º Ano

5º Semestre

6 UC Obrigatórias num total de 30 ECTS

6º Semestre

6 UC Obrigatórias num total de 30 ECTS

4º Ano

7º Semestre

3 UC Obrigatórias num total de 21 ECTS

UC Optativas num total de 9 ECTS

8º Semestre

3 UC Obrigatórias num total de 21 ECTS

UC Optativas num total de 9 ECTS

5º Ano

9º Semestre

2 UC Obrigatórias num total de 15 ECTS

Dissertação, num total de 30 ECTS (Anual)

10º Semestre

2 UC Obrigatórias num total de 15 ECTS ***



Program Contents

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Architecture Design Studio I (ARQ2502I)

Subject: Composition: tectonic and stereotomic dimension of Architecture

1. The tools of the project: sketch, technical drawing, model
2. Analysis of study cases according with its tectonic and stereotomic dimension
3. Architectonic composition: measure, proportion and scale/geometry, module, balance and unit/contrast and tension/limit and inward/outdoor relation, visual relations/light
4. Methodological basis of space composition
5. Representation of Architecture: sketch, model, text and oral presentation

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Introduction to Drawing I (VIS2503I)

a) History of Drawing related to Architecture (part I)

The role of drawing in the History of Art and Architecture; its connection with particular moments of Human History and the transversal influences of and with other areas of knowledge (engineering, science, philosophy, society,?) exploring the contribution of classic authors.

b) The Descriptive Design (part I)

- Concepts of proportion and scale;
- Framing and composition: axis, symmetry, hierarchy, rhythm and repetition concepts;
- Outline, draft, note;
- Spaces and environments, outside and inside;
- Strict design: designing, sections, elevations, detail;s
- Axonometric perspective;
- Light, shadow and twilight;
- The Model as an extension of architectonic graphic expression.

AGENDA:

1. Introduction
2. Analysis
3. Spatial analysis. The perspective.
4. Codified Representation
5. History of Architectonic representation.



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Descriptive Geometry I (ARQ2504I)

1. Basis of geometric architectural forms
2. The representation of European and American method
 - Definition and characterization of European and American method
 - Election of the orientation of the architectural object
 - Election of views
 - Scale
 - Types of lines
 - Cuts and sections
 - Shadows
 - Dimensioning
3. The three-dimensional representation
 - Definition and characterization of axonometric
 - The election of the type of axonometric (isometric, Dimetra, Trimetric, equestrian and military), according to the architectural object to represent
 - Methods of construction of an axonometric
 - The exploded axonometric
 - Cut axonometric
 - The use of transparency

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Construction I (ARQ2505I)

- What is the meaning of ?matter?.
- The phenomenology of ?matter?.
- Natural and Artificial materials.
- Industrial processes.
- Proportion and finishings.
- Concrete, metals, wood, glass, ceramics, stone, plastics, textiles, coatings.

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Classic and Middle Age Architecture (ARQ2506I)

1. Introduction. Permanence of Classic Architecture Culture – Egipt, Grece and Rome – in Antiquity and Middle Age Territories and Architectures.
2. East Rome Territories and Architectures. Approach to territory and landscape; models and buildings' themes; conception, articulation and formal, spatial and material meaning.
3. Territories and Architectures of West Islam. Approach to territory and landscape; models and buildings' themes; conception, articulation and formal, spatial and material meaning.
4. Romanic Territories and Architectures. Approach to territory and landscape; models and buildings' themes; conception, articulation and formal, spatial and material meaning.
5. Gothic Territories and Architectures. Approach to territory and landscape; models and buildings' themes; conception, articulation and formal, spatial and material meaning.
6. Conclusion. Permanence of Antiquity and Middle Age Architectonic Culture in Humanism Era.



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Space Organization (ARQ2507I)

1. The universal elements and the local elements.
2. The timeless (the Távoras' constants) in contemporary space.
3. The classic and the present, that needs to be read and, eventually, decoded, interpreted.
4. The place and temporality of contemporary versus timeless space.
5. The pass and the passage (the door and the window) as fundamental and structuring elements of the space by its double physic and symbolic condition which compete in definition of environment notions - the visible and the sensitive.
6. Notion of environment, of psycho geography (from Debord) and psycho spatiality (from Bachelard's poetic definitions - the "inside" and the "outside").

The contents may divide themselves into the following themes:

1. The notions of place, from genius loci
2. Fundamental aspects, myth and nature of cities
3. Space and society / space and individuality
4. The consistence of architectonic space: its experience and perception, from time, senses, material and immaterial

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Architecture Design Studio II (ARQ2508I)

Subject: Composition: spatial sequence and course while architectonic experience

1. The tools of the project: sketch, technical drawing, model
2. Analysis of study cases according to their spatial dimension and the proposed courses
3. The architectonic Route: time, remarkable moments, contrast and tension, ergonomics, habitableness, environments, textures
4. The place and the program
5. Representation of Architecture: sketch, model, text and oral presentation

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Introduction to Drawing II (VIS2509I)

a) History of Architectural Drawing (part II)

The role of drawing in the history of visual arts and its influence in the work of artists and architects such as: Vitruvius, Vignola, Serlio, Palladio, Herrera, Scamozzi, Piranesi, Le-Duc, Ledoux, Schinkel, Loos, Housaki, Wright, Le Corbusier, Mies, Bauhaus, Utzon, Smithson, Archigram, Friedman, Siza, Eisenmann, Zumthor.

b) The Descriptive Design (part II)

- Proportion and Scale;
- Symmetry, repetition, hierarchies;
- Hand drawing, sketches;
- External and Internal spaces;
- Technical drawing: Plan, section, façade, details;
- Axonometrics;
- Model as extension of the architectural work

THEMES:

- 1 Advanced drawing techniques.
- 2 Lux.
- 3 The human figure.
- 4 Drawing as an autonomous discipline.



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Descriptive Geometry II (ARQ2510I)

1. The representation of conic perspective
 - Definition and characterization
 - Shadows
2. Surfaces Representation
 - Definition and characterization
 - Sphere
 - Elipsóide
 - Toro-escócia
 - Parabolóide hiperbólico
 - Hiperboide
 - Cone
 - Helicóide
3. Landscape Representation
 - Cartography
 - Landscape modelling
 - Technical drawing
4. Solar Geometry
 - Natural and Artificial lighting
 - Solar Charts and its representation
 - Building and solar orientation

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Construction II (ARQ2511I)

1. The notion of a system.
2. Building systems associated to structural elements.
3. Identify different types of systems.
4. Identify different types of constructive solutions.
5. Recognize the building elements of a structural system.

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Renaissance and Baroque Architecture (ARQ2512I)

1. Permanence of Classic Architecture Culture - Egypt, Greece and Rome - in Antiquity and Middle Age Territories and Architectures.
2. East Rome Territories and Architectures. Approach to territory and landscape; models and buildings' themes; conception, articulation and formal, spatial and material meaning.
3. Territories and Architectures of West Islam. Approach to territory and landscape; models and buildings' themes; conception, articulation and formal, spatial and material meaning.
4. Romanic Territories and Architectures. Approach to territory and landscape; models and buildings' themes; conception, articulation and formal, spatial and material meaning.
5. Gothic Territories and Architectures. Approach to territory and landscape; models and buildings' themes; conception, articulation and formal, spatial and material meaning.
6. Permanence of Antiquity and Middle Age Architectonic Culture in Humanism Era.



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Anthropology of Space (SOC2513I)

1. The Object of Anthropology. Conceptualizing culture, space and place.
 2. The Anthropological Method: Fieldwork and Participant Observation
 3. The cultural constructedness of Space. Space and cultural Identity.
 4. Social appropriation and the cultural meanings of place: Public Spaces and Domestic Space
- Case-Studies under analysis: a) Public Spaces (in three contexts): São Paulo (Brazil), Izmir (Turkey) and Singapore; b) Domestic spaces (in three contexts): Berber (Algeria), Malay (Malaysia) and Portuguese (Portugal)

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Project III (ARQ2514I)

Subject: Order: relation between functional organization, physical definition and architectonic structure

1. Project tools: sketch, technical drawing, computer, model
2. Analysis of study cases accordingly to identification of intrinsic order of the architectonic structure
3. Relation between functional organization, physical definition and architectonic structure
4. Relation with architectonic heritage
5. Representation of Architecture: sketch, technical drawing, computer, model, text and oral presentation

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Architectural Drawing I (ARQ2515I)

a) History of Architectural Drawing

The role of architectural drawing in art history and architecture, its relation with the singular moments of human history and cross-influences and other areas of knowledge (engineering, science, philosophy, society, ...) exploring, among others, the contributions of authors: Vitruvius, Vignola, Serlio, Palladio, Herrera, Scamozzi, Piranesi, Le-Duc, Ledoux, Schinkel, Loos, Housaki, Wright, Le Corbusier, Mies, Bauhaus, Utzon, Smithson, Archigram, Friedman, Shiza Eisenmann, Zumthor.

b) The Analytical Design (Part I)

- Analysis of the mass;
- Spatial Analysis;
- The Comping as architectural extension of graphic expression.

AGENDA:

- 1 Analysis of a Mass
- 2 Spatial Analysis

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Digital Representation I (ARQ2516I)

1. Introduction. Drawing, Architecture, Computation, Representation
2. Digital Images, Photoshop
3. Layers, Channels, Photoshop
4. Exercíce 1
5. 2D Construction (Entities and Properties) AutoCAD Drafting
6. Layers, Linetypes, AutoCAD Drafting
7. 2D Drawings (planta, corte e alçados), AutoCAD Drafting
8. Exercício 2
9. Constructions 3D (layers, blocks, xref, and printing) AutoCAD Drafting
10. 3D View Projections, 3D Solids. AutoCAD Solid Modeler, UCS, Projections
11. Photoshop, Adobe InDesign
12. Exercice 3



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Construction III (ARQ25171)

1. Basement work.
2. Structural Systems.
3. Roof Systems and insulation.
4. Façades.
5. Exterior and Internal Walls.

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History of the XIX Architecture (ARQ25181)

1. XX Century Architectures. The genesis of Neo-Classicism and Revivalism. Architectonic Culture and Disciplinary Reorganization.
2. Illustration and Romanticism Architectures and Territories.
 - a) Models and buildings' themes; conception, articulation and formal, spatial and material meaning.
 - b) From Historicist and Eclectic Revivalism till Teaching Beaux-Arts in second half of XX Century.
3. Romanticism and Pre-modernity Territories and Architectures.
 - a) Structural rationalization, new structures and new materiality.
 - b) Urban reforms and new urban models. Approach to Anti-industrialization Architectures. From home revivalism to the Arts and Crafts and to movement of Garden-City.
 - c) First answers to social housing issues.
 - d) From Chicago School till Skyscrapers.
 - e) National authenticities and answers to historicisms.
4. Permanence of Architectonic Culture of the eighties, in the XX Century.

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Geography and Territory (GEO25191)

1. Objectives and specialization of science.
2. Location; interaction between man and environment; region; place; movement; landscape.
3. Areas of synthesis, the way of geographic approach, the ways of spatial representation.
4. The scale. Maps reading.
5. The geographic space: its evolution along the history of geography since Classic Geography. Reference to theories and models of spatial organization. Ways of representing absolute space, relative space and perceived space.
6. The relation man/nature in geography. Landscape concept.
7. The physic features of territory: climatic system; effects of topography and land use; consequences of global changes in riverside areas (rural and urban); "urban climate"; identification and characterization of elementary shapes of relief through its morphological and cartographical expression; identification and risks relieving; natural risks and planning.
8. Discovery of regional division of Portugal.
9. Urban space.
10. Inquiry.

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Architecture Design Studio IV (ARQ25201)

Subject: Order: relation between functional organization, physical definition and urban structure

1. Project tools: sketch, technical drawing, computer, model
2. Analysis of study cases accordingly to identification of intrinsic order of the urban structure
3. Relation between functional organization, physical definition and urban structure
4. Relation with urban heritage
5. Representation of Architecture: sketch, technical drawing, computer, model, text and oral presentation



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Architectural Drawing II (ARQ2521I)

a) History of Architectural Drawing

The role of architectural drawing in art history and architecture, its relation with the singular moments of human history and cross-influences and other areas of knowledge (engineering, science, philosophy, society, ...) exploring, among others, the contributions of authors such as: Vitruvius, Vignola, Serlio, Palladio, Herrera, Scamozzi, Piranesi, Le-Duc, Ledoux, Schinkel, Loos, Housaki, Wright, Le Corbusier, Mies, Bauhaus, Utzon, Smithson, Archigram, Friedman, Shiza Eisenmann, Zumthor .

b) The Analytical Design (Part II)

- Functional Analysis;
- Constructive analysis;
- The promenade architecturale;
- The Comping as architectural extension of graphic expression.

AGENDA:

- 1 Functional analysis;
- 2 Constructive analysis,

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Digital Representation II (ARQ2522I)

1. Introduction: Drawing, Architecture, Computation, Representation.
2. 2D (Entities and Properties) AutoCAD drafting
3. Layers, linetypes, AutoCAD drafting
4. Drawings 2D (plan, sections e elevations), AutoCAD drafting
5. Exercise 1
6. 3D Constructions
7. 3D view projections, 3D, 3D Studio MAX
8. Cameras and lighting, 3D Studio MAX
9. Materials and textures, 3D Studio MAX
10. Exercise 2.
11. Frames
12. Exercise 3

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Construction IV (ARQ2523I)

1. Spans.
2. Pavements.
3. Stairs.
4. Thermal insulation.
5. Acoustic absorption.



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History of the XX Architecture (ARQ2524I)

The 8 tomes of OEuvre Complète of Le Corbusier are the basis to the follow structure:

1. Preamble to XX Century Architectures.
2. Creation of Modernism: from OEuvre Complète 1910-29.
3. Assertion of Modernism: from OEuvre Complète 1910-29.
4. Confirmation of Modernism: from OEuvre Complète 1910-29.
5. Reconfirmation of Modernism: from OEuvre Complète 1929-34.
6. Reorientations and Crisis of Modernism: from OEuvre Complète 1929-34 and 1934-38.
7. Resistance and regionalization of Modernism: from OEuvre Complète 1934-38.
8. Re-consecration of Modernism: from OEuvre Complète 1946-52.
9. Continuity and Disjunction in Modernism: from OEuvre Complète 1952-57.
10. Monuments and Monumentality in Modernism: from OEuvre Complète 1952-57.
11. Extension, Plurality and Critiques to Modernism: from OEuvre Complète 1957-65 and 1965-69.
12. Permanence of Architectonic Culture of XX Century today.

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Landscape Studies (PAO2525I)

1. The concept of landscape: the semantic question, historical evolution and the multidisciplinary approach;
2. Landscape components - socio-economic, cultural, ecological and aesthetic;
3. The importance of open space in the city: public spaces: concepts and evolution. Other typologies of open space.
4. Landscape architecture: concept and fields of intervention.
5. Concepts, values and philosophies of intervention in the landscape: territory, nature, context, site, system, dynamics, sustainability, conservation, authenticity, culture, ecology, aesthetics and ethics; genius loci, continuum (natural and cultural), landscape unit; global landscape;
6. Morphological and biological systems and cultural systems: Ecological Structure and Urban Ecological Structure;
7. Public landscape policies;
8. Landscape planning;
9. Nature conservation.

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Architecture Design Studio V (ARQ2526I)

Subject: Context: the landscape and its interaction with the architectonic set

1. Project tools: sketch, technical drawing, computer drawing, model
2. Analysis of study cases accordingly to its interaction with landscape
3. Landscape integration
4. Representation of Architecture: sketch, technical drawing by computer, photomontage, model, text and oral presentation



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Architectural Drawing III (ARQ25271)

a) History of Architectural Drawing

The role of architectural drawing in art history and architecture, its relation with the singular moments of human history and cross-influences and other areas of knowledge (engineering, science, philosophy, society, ...) exploring, among others, the contributions of authors: Vitruvius, Vignola, Serlio, Palladio, Herrera, Scamozzi, Piranesi, Le-Duc, Ledoux, Schinkel, Loos, Housaki, Wright, Le Corbusier, Mies, Bauhaus, Utzon, Smithson, Archigram, Friedman, Shiza Eisenmann, Zumthor .

b) Design Overview

- Design of interpretation and coding;
- Abstraction;
- Communication;
- Graphical representation of an idea.

Agenda:

Drawing as a synthesis

1.1 The design and synthesis. Accuracy and economics of graphic language.

1.2 The communication of architectural design as an idea.

1.3 Draw to be understood. Draw to show. Drawing to communicate.

1.4 The design synthesis as pure expression of an idea.

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Digital Representation III (ARQ25281)

1.

- Drawing primitives
- 2D and 3D tools
- Edit Spline and Extrude
- NURBS
- Key Frames
- Animations

2.

- Cameras
- Lens and Angles

3.

- Lights
- Shadows
- Renders and Textures
- Background

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Structures I (ARQ25291)

Different types of mechanical forces.

Tension and compression.

Equilibrium in space.

Mechanic behaviour of materials.



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Architecture Theory I (ARQ2530I)

The programmatic contents arise from the objectives and skills to develop, and suit to semi-annual teaching period, according to the follow structure:

1. Introduction. Architecture Theory.
2. Architecture of Origin of Dwelling.
3. Architecture and Place, Purpose and Address.
4. Architecture and Architecture Project.
5. Architecture and Ethics.
6. Architecture and Corporeity.
7. Conclusion.

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Urban and Territorial Design I (ARQ2531I)

1. The city in Industrial Revolution and the Socialist Utopias.
2. The chains of Cultural and Progressive Thinking.
3. The City-Garden of Ebenezer Howard.
4. The contribution of Patrick Geddes for planning.
5. Lewis Mumford and the ideas of RPAA

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Architecture Design Studio VI (ARQ2532I)

Subject: Context: the urban core and its interaction with the architectonic set

1. Project tools: sketch, technical drawing by computer, model
2. Analysis of study cases accordingly to its interaction with a urban core
3. Urban integration
4. Representation of Architecture: sketch, technical drawing by computer, photomontage, model, text and oral presentation

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Architectural Drawing IV (ARQ2533I)

a) History of drawing in Architecture

To learn how to draw a design, an idea.

b) Topics

- Expressiveness, intentionality and personality of architectural design;
- The drawing and project as an interactive process;
- The model concept;
- The architectural drawing and utopian architectures.

Theme:

The theme of this course is organized to explore drawing as a synthesis of architectural ideas.

Drawing as a proposal

1.1 The purposeful design. Flexibility and ambiguity ..

1.2 The proposal for the architectural drawing, the solution space.

1.3 Draw to propose. The workshop, the competition, publishing the work.

1.4 The architectural design as an end in itself. The boundaries of art. The utopian architectures. In the Sant'Elia ledoux. From Le Corbusier to Superstudio. Friedman to Hadid.



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Digital Representation IV (ARQ2534I)

1. Technology and Architecture
2. Technology and Digital Architecture
3. Complexes Surfaces
4. Tectonics and Materiality
5. 3D modelling and NURBS
6. Planification of Surfaces
7. Parametric Design
8. Rapid Prototyping
9. Project
10. Fabrication

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Structures II (ARQ2535I)

Pré-size structural elements:

1. concrete, steal and wood pillars.
2. concrete, steal and wood beams.
3. concrete lage.
4. pre-stressed concrete lages and beams.
5. trusses.

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Architecture Theory II (ARQ2536I)

The programmatic contents arise from the objectives and skills to develop and suit to semi-annual teaching period, according to the follow structure:

1. Architecture Theory.
2. Concepts, Models and Subjects in the Architecture Construction Process.
3. Territory, Place and Location in the Architecture Construction Process.
4. Purpose, Space, Shapes and Atmospheres in the Architecture Construction Process.
5. Memory, Architectonic Culture and other Contaminations in the Architecture Construction Process.
6. Public Dominion and Private Dominion in the Architecture Construction Process.
7. Involvement of instrumental Resources and its Limitations in the Architecture Construction Process.
8. Architecture how to Do.

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Urban and Territorial Design II (ARQ2537I)

1. Broadacre City, by Wright and Ville Radieuse, by Le Corbusier.
2. The influence of Athens Charter in conditioning of contemporary urban space. Virtues and illusions of a strong ideological character document.
3. The Team X and the moment f change of Modernism paradigm to an approach more realistic and raw, the brutalism while pragmatic attitude.
4. Mega-structures, re-emergence of fantastic, and of urban delirium: Archigram, Archizoom, Kolof, Koolhaas.
5. Critical reading that puts in confrontation the ideas and urban models presented in the gap of about 150 former years.
6. The contemporary space, disillusionment and epistemological and spatial fragmentation. The space left, of accumulation, of communion and separation.



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Advanced Architecture Design Studio I (ARQ2538I)

Subject: Theme: spatial qualities

1. Project tools: sketch, technical drawing by computer, model
2. Project research methods
3. Complex programs as integrated elements of the project
4. Analysis of study cases accordingly to their constructive dimension
5. Materials and their application and suitability
6. Constructive systems
7. Architecture representation: sketch, technical drawing by computer, photomontage, model, theoretical grounding, oral presentation and exhibition of the project

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Construction Technology I (ARQ2539I)

1. Buildings' thermic
 - Understand the principles of transmission of heat.
2. Properties of non transparent materials
 - Understand the notion of thermic resistance (U value).
 - Identify thermic bridges of buildings;
 - Understand the principle of thermic inertia.
3. Properties of transparent materials
 - Compare performances of different kinds of windows through its main parameters (U,g,t,a);
 - Understand the conditions for solar profits and thermic losses;
 - Recognize and manipulate the impact of different shading systems;
4. Buildings' acoustics
 - Understand the generic principals and the nature of acoustic field and dissemination of sound in open and closed spaces;
 - Understand the resonant reduction effect consequence of distance and the effect of different screens;
 - Generic principals of acoustic quality of a determined built space;
5. Lighting
 - Recognize the contribution of natural lighting in several points of a place and deduce complementary needs of artificial lighting

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Research Methodology I (ARQ2540I)

1. Definition of the master final work
2. Strategies of a research theme and a study object
3. Definition of state of the art
4. General methodologies of scientific research and specific for research in architecture
5. General methodologies of scientific writing and specific for writing about architecture



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Introduction To Islamic Architecture And To The Maghrebian Space (ARQ2541I)

1. Theoretical and methodological issues
2. Islamic Portugal: an historical perspective
3. Islamic heritage in Portugal and in Al-Andaluz
4. Topography and urbanism of Islamic cities in the west
5. Military spaces
6. Popular architecture
7. Palatine spaces
8. Religious spaces
9. Baths and markets of Islamic cities
10. The water and architecture in the western Islamic world
11. Mudejar art
12. Contemporary architecture in Islamic cities

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Portuguese Architecture (ARQ2542I)

1. Approach to an Architectonic Culture in Portugal: roots, paths, synthesis and limitations.
2. Approach to an Architectonic Culture of the 20th in Portugal: permanencies and paradigmatic themes.
3. City, Territory and Landscape: models, matrices and fundamental issues.
4. The problematic of the Portuguese House.
5. The Portuguese World Exhibition of 1940.
6. The 1st National Congress of Architecture of 1948: fundamental thesis, political issues and social involvement.
7. The Inquiry to Traditional Architecture and Neo-Realism: reasons, impacts and consequences.
8. Brazil and the Colonial Issue: experimentation, exoticism and new scales.
9. Dwelling issues and the right to Architecture: housing, new cities, urban sets, and territorial organization.
10. Review of Modernity: new cultural dynamics, both economic and urban, the critical regionalism and the critics to regionalism.
11. Permanencies of Portuguese Architectonic Culture of the 20th Century in contemporaneity.

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Fundamentals of Photography (VIS2543I)

The course consists of sessions combining theory and practice on the topic of plasticity in Photography, taking into consideration technical aspects such as use of light, composition, exposure and aperture, scale, and the relation between positive and negative. Through a critical observation of images by photographers of reference, the course will also deal with the difference between analogue and digital photography. The practical part of the course will focus on: different kinds of cameras; analogue and digital media; focal distance and zoom in relation to different lenses; aperture; exposure times and adjustments; natural and artificial light; lighting techniques; use of filters; composition and framing; depth of field; selective focus; light measurement and compensation; analogue and digital image enhancement techniques and printing. The students will be required to execute practical photographic exercise to consolidate the theoretical and practical knowledge and skills.

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Sustainable Construction (ARQ2544I)

Waste source of raw material and energy. Management of construction waste and demolition. Minimization and waste recycling construction and demolition. Recovery of waste in construction. Recycling aggregates. Waste legislation. Analysis of relevant projects. Energy and environmental performance of buildings. Energy efficiency. Comfort and indoor air quality. Renewable energy. National Certification System Energy Performance and Indoor Air Quality in Buildings. Constructive solutions and environmentally friendly technologies. Passive measures. Special measures. Solar thermal systems. Use of recycled or recyclable materials. Uptake and recycling of household water. Efficient use of electricity. Alternative energy. Use of Materials Eco-efficient and unconventional. Sustainability of concrete.



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Urban Space (GEO0772L)

1. Discussion about the concept of city and urbanization process.
2. Origin and historical evolution of the cities.
From the first cities to the Industrial Revolution.
The Industrial Revolution, the development and reorganization of the cities.
3. Urban morphology and structure.
Elements of the urban landscape.
Typology of built spaces.
Typology of not constructed urban spaces.
Urban structure models.
4. Urban functions and urban spaces functions.
Location pattern of the main activities and trends of evolution.
5. Main problems of the urban development.
Degradation of urban life quality.
Aging and requalification of historical centers.
The urban expansion and the integration in the landscape.
6. Strategic planning and requalification of the medium sized cities.
Some case studies.

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Advanced Architecture Design Studio II (ARQ2545I)

Subject: Theme: construction physics

1. Project tools: sketch, technical drawing stand by computer, model
2. Project research methods
3. Complex programs as integrated elements of the project
4. Analysis of study cases accordingly to their constructive dimension
5. Materials and their application and suitability

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Construction Technology II (ARQ2546I)

Integration of energetic systems in buildings, from the project coordination point of view

- Moist air and principals of mass transfer and condensation;
- Analysis of current systems of: a) heating and cooling systems production; b) delivery of heat and cold; c) mechanical ventilation; d) hydraulic pumping and air filtering;
- Conditions for thermic confort and principals for air conditioning projects;
- Indoor air quality notion and natural ventilation;
- Lighting systems;
- Regulation of Buildings' Energetic and Air Conditioning Systems (DL-79/2006) and energetic auditing within DL 79/2006;
- Energy certification concept.



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Research Methodology II (ARQ25471)

This curricular unit will have the following programmatic contents:

1. Interaction and multidisciplinary in creation of architecture
2. Resemblances and differences between traditional techniques and contemporary technological languages and its influence into the research process.
3. Resemblances and differences between artistic research and architectonic research.
4. The relevance of new media as field work and tool of development of the artistic project and project in architecture.
5. Argumentative strategies in architecture research
6. The expanded field of architecture
7. Read, understand, interpret architecture: possibilities and models of spatiality
8. Architecture fictions and narratives: the things that tell stories.

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Travel Notebooks (ARQ25481)

1. The relevance of architectonic knowledge produced through travelling.

The relevance of travelling in education as an architectonic subject is recognized and widely documented. Reports which belong to history of architecture that, in a way, set up a story - the one of architecture travelling. The dimension of experience acts on the perception of space.

2. Brief history of travelling in architecture.

The space of this story is inscribed in an extent spatiotemporal ranging from the imaginary autobiography about life and death of Roman Emperor Adrian, by Yourcenar, to road-book Learning from Las Vegas, by Venturi and Scott Brown, passing, by the way, by famous and initiatory travelling written and designed by hand: the Japan by Taut; the Orient, Germany and Italy by Corbusier; Italy by Kahn; America by Távora; Greece by Giancarlo de Carlo; the cities of Siza.

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Intervention Methodologies in architectural Heritage (ARQ25491)

1. Theory and history of intervention in architectural heritage, preservation and renewal
 - Introduction to practices of intervention (definition of concepts and terminology).
 - History of preservation and renewal: origin and evolution.
 - Theory and methodologies of intervention
2. Intervention into heritage
 - Diagnosis of pathologies.
 - Previous study to intervention.
 - The intervention project.
 - Preservation methodologies
 - Procedures and constructive techniques for intervention.
 - The architect as coordinator of a multidisciplinary team
3. Management and tutelage of heritage
 - Letters, recommendations and international conventions about heritage.
 - The tutelage of heritage and support programs for heritage classification



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Aesthetics of Architecture (FIL2550I)

1. The aesthetic space: the combine 'dreamed' aesthetic space / 'real' architectonic
2. The suspension of 'factic' subject and object in the Kantian aesthetic judgement and the Deleuzian 'percept'
3. Phenomenology: visibility, whole/parts, horizon/perceived thing, vision and body, perception as actively motor and differential phenomenon. The Cartesian paradygm vs. Phenomenological explanation of perception and modern art
4. Saussure's Linguistics, Matisse's theory of the pictorial elements as diferencial relations, not as positive terms
5. The intertwining between architectural thinking and phenomenological philosophy: Zumthor, Pallasmaa, Cruz-Pinto
6. Anthropological dimensions: poetics and mythics of the space (Bachelard, Eliade)
7. Ontology of dwelling and building: Heidegger / Zumthor
8. The constructive and meaningful parameters in arts
9. Space, city and territory in contemporary culture and experience, and the stances of: Derrida, Lyotard, Foucault, Deleuze, Virilio

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Yards and Safety (ARQ2551I)

1. Enterprises and construction
2. Qualification system for the performance of construction activity
3. Design and measurements
4. The assignment of the contract
5. Organization, facilities and equipment of the construction site
6. Budgeting of construction
7. Safety and Health on the Construction Site

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Landscape and Countryside (PAO0782L)

The concept of rural space and its evolution. Rural Geography, Agricultural Geography, and contributions from other disciplines. The organization of the rural space, until some decades ago. Models of interpretation. Processes of change of the agriculture and of the landscape. From productivism to post-productivism and multiple transition processes. The demand and the definition of landscape functions. Patterns and organization of the landscape today. The Portuguese rural space today.

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Advanced Architecture Design Studio III (ARQ2552I)

Subject: Synthesis: Research in project

1. Research methods in project
2. Complex architectural programs integrated as elements of the Design Project
3. Analysis of cases studies which complexity reflects a priori articulation of different knowledge in its conception
4. Materials application
5. Infrastructure systems and construction coordination
6. Representation of Architecture: hand drawing, cad drawing, photomontage, model, theoretical justification, oral presentation and project communication skills



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Construction Technology III (ARQ2553I)

Integration of special projects in the architectural design (coordination):

- Structural System
- Air Conditioning and Water Heating systems;
- Solar and Geothermal Systems;
- Thermic;
- Ventilation;
- Rainwater Networks, Water Supply and Sewage;
- Natural and Artificial Lighting
- Acoustics
- Principals of Energetic Efficiency and Sustainability

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Thesis (ARQ11316I)

They depend on the research work developed by each student.

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Advanced Project IV (ARQ2555I)

Subject: Synthesis: complexity and critical reflection

1. Project tools: hand drawing, cad drawing, model making
2. Research methods applied to Architectural Design and critical reflection
3. Complex programs as integrated and structured elements of the project
4. Analysis of case-studies which complexity reflects a priori articulation of different knowledge in its conception
5. Materials and its application and adequacy
6. Infrastructure systems and specialties coordination
7. Representation of Architecture: hand design, drawing by computer, photomontage, model making, theoretical issues, oral presentation and final work presentations.

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Construction Technology IV (ARQ2556I)

1. Coordination of different systems, diagnosis and optimization of building's energetic fulfilment.
2. Concept and strategies related to environment impact.