



Study Plan

School: School of Sciences and Technology
Degree: *** TRANSLATE ME: Pós-Graduação ***
Course: Building Restoration and Conservation (cód. 485)

1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ERU10919O	Pathologies in Proceedings of Reinforced Concrete and Steel	Civil Engineering	6	Semester	156
ARQ11051O	Evolution of processes and building materials	Architecture	6	Semester	156
ARQ10921O	Conservation and Rehabilitation of Coatings and Finishes	Architecture	6	Semester	156
ARQ10922O	Pathologies of Masonry, Wood and Clay Buildings	Architecture	6	Semester	156

1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ERU10920O	Energy Rehabilitation of Buildings	Civil Engineering	6	Semester	156
ERU10924O	Rehabilitation and City (Infrastructure)	Civil Engineering	6	Semester	156
ARQ10925O	Case Studies	Civil Engineering and Architecture	6	Semester	156

2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ERU10926O	Seismic Rehabilitation	Civil Engineering	6	Semester	156
ERU10923O	Economy, Management and Maintenance of Built Heritage	Civil Engineering	6	Semester	156
ERU11052O	Project of reuse of spaces	Civil Engineering	6	Semester	156

Conditions for obtaining the Degree:

*** TRANSLATE ME: Para aprovação na componente curricular, é necessário a aprovação (através de avaliação ou creditação) das seguintes unidades curriculares:

1º ano:

1.º Semestre { \ } newline

- 4 UC Obrigatórias num total de 24 ECTS

2.º Semestre { \ } newline

- 3 UC Obrigatórias num total de 18 ECTS

2º ano:

1º semestre: 3 UC obrigatórias num total de 18 ects ***

Program Contents



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Pathologies in Proceedings of Reinforced Concrete and Steel (ERU109190)

1. Introduction
2. Reasons that determine the need to repair a structural element
3. Main symptoms of deterioration of reinforced concrete structures and steel structures and their causes of degradation
4. Repair of reinforced concrete structures and steel structures
5. Monitorization and inspection of structures

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Evolution of processes and building materials (ARQ110510)

Characterization of Built Heritage: architecture, materials, structure.

Constructive characterization: foundations, bearing walls, floors, roofs, stairs, partition walls, coatings and finishes, joinery, masonry, iron elements and facilities.

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Conservation and Rehabilitation of Coatings and Finishes (ARQ109210)

1. Aim of the wall coverings
2. Coatings
 - 2.1. Wall coverings
 - 2.1.1. traditional
 - 2.1.2. nontraditional
 - 2.2. Floor coverings
 - 2.3. Coatings ceilings
 - 2.4. Roof coverings
 - 2.4.1. traditional
 - 2.4.2. nontraditional
 - 2.5. Compatibility between walls and coatings
3. finishes
 - 3.1. traditional
 - 3.2. nontraditional

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Pathologies of Masonry, Wood and Clay Buildings (ARQ109220)

1. História da edificação em alvenaria, madeira e construção em terra; edifícios pombalinos
2. Particularidades do funcionamento estrutural
3. Comportamento e reforço sísmico
4. Inspeção e monitorização de estruturas
5. Soluções construtivas de reabilitação e conservação
6. Exemplos de aplicação



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Energy Rehabilitation of Buildings (ERU109200)

1. Environmental conditions required to obtain comfort.
Thermal, acoustic and visual comfort and indoor air quality.
2. Thermal rehabilitation
 - 2.1 Thermal comfort and energy efficiency.
 - 2.2 Regulation requirements applicable to rehabilitation of existing buildings.
 - 2.3 Diagnosis and intervention methodologies.
 - 2.4 Assessment and energetic techno-economic interventions.
3. Acoustical rehabilitation
 - 3.1 Regulation requirements applicable to rehabilitation of existing buildings.
 - 3.2 Airborne sound insulation.
 - 3.3 Impact sound insulation.
 - 3.4 Room acoustics.
4. Luminic rehabilitation
 - 4.1 Capture, transmission, distribution, protection and control.
 - 4.2 Advanced daylighting systems.
5. Rehabilitation to provide indoor air quality.
 - 5.1 Indoor pollutants sources.
 - 5.2 Strategies to control indoor air quality.
 - 5.3 Ventilation and indoor air quality.
6. Building rehabilitation solutions

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Rehabilitation and City (Infrastructure) (ERU109240)

1. Infrastructure in the city;
 - Road network
 - Pedestrian Network
 - Water supply systems
 - Irrigation networks of green spaces
 - Drainage systems for sewage and stormwater
 - Systems of waste management
 - Electrical power systems
 - Networks and telecommunication systems
 - Gas networks
2. Performance evaluation of infrastructure
3. Planning of rehabilitation
4. Techniques for rehabilitation of infrastructures
5. Sustainable cities.

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Case Studies (ARQ109250)

Presentation of the solutions adopted in several rehabilitation works, analyzing the methodologies and techniques adopted in each of them.



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Seismic Rehabilitation (ERU10926O)

1. The basic concepts of seismic design
2. Particularities of old buildings and masonry materials mixed
3. Application of EC8
4. Case studies
5. Recovery Solutions
6. seismic reinforcement

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Economy, Management and Maintenance of Built Heritage (ERU10923O)

1. Value equity and real estate.
2. Urban legislation
3. Useful life of the buildings. Demolish or rebuild? Reuse or recover?
4. Maintenance of the built heritage
 - 4.1. stakeholders
 - 4.2. Types of maintenance
 - 4.3. Maintenance vs. reliability
5. Maintenance management
 - 5.1. Planning of maintenance operations
 - 5.2. inspections
 - 5.3. Sheets of maintenance
6. Budget preparation. Economic advantages

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Project of reuse of spaces (ERU11052O)

1. Perception of space
2. functional diagrams
3. lighting
4. Distribution of space
5. Ecodesign, sustainable environments and user behavior
6. graph
7. Study emblematic cases this perspective LOW COST reuse.
8. Conducting studies with solutions to real cases.
9. Reuse versus remodeling.