

## Conservation and Rehabilitation II

Academic Year:

**2018/2019**

Course	Master's degree in Conservation and Rehabilitation								
Scientific Area	Conservation and Rehabilitation								
ECTS Credits	5,5	Curriculum Unit code	CRII	Year	1	Semester	2	Type	Compulsory
Prerequisites									
<b>Contact Hours:</b>									
Lecture Sessions	15	Lecture-Practical Sessions	30	Practical and Laboratory Sessions					
Tutorial		Placement		Seminar					
Fieldwork		Other	7,5	Autonomous Study	96				
Responsible	Ana Maria C. Aires P. Silva Bártolo				Position	Visiting Adjunct Professor			
Lecturers					Position				
Learning Outcomes	Concerning reinforced concrete and steel structures, knowing thoroughly the properties of materials and corresponding deterioration mechanisms under external and internal actions. To have basic knowledge as regards the assessment of structures with the results of inspections. To know how to interpret inspection reports in order to allow identifying anomalies and their possible causes. To know thoroughly the relevant rehabilitation techniques used currently taking into account the materials, systems and methods. To implement o acquired knowledge to a practical case of rehabilitation project – RC or steel – identifying associated problems considering, with critical approach, several hypothetical solutions and/or an assembly of these. Introduction to the maintenance of structures								
Syllabus	Chapter 1 - Summarized History of Reinforced concrete structures Chapter 2 - Assessment of state and performance of constructions. Chapter 3 - Inspection techniques and diagnosis Chapter 4 - Anomalies e causes Chapter 5 - Assessment of assembled information on a construction and project definition Chapter 6 - Rehabilitation and reinforcement techniques on RC structures Chapter 7 - Steel Construction. Construction in iron/steel. Assessment. Inspection Techniques. Anomalies and causes. Rehabilitation (repair) and reinforcement techniques.								
Teaching Methodologies	The teaching methodologies used are based on the expository method, using audiovisual media, to the theoretical contents complemented with the analysis of case studies related to constructive pathology with the technologies, the design and the execution of maintenance and rehabilitation works. Case studies. A script will be prepared, by the Professor, with specific guidelines for the development of practical work. Throughout the semester, these will be accompanied by the teacher to clarify doubts and to foster critical analysis, developing the technical autonomy. Conducting study visits to maintenance work or rehabilitation. Technical seminars. E-learning activities will be encouraged to research, analysis and comment on themes related to the syllabus								
Evaluation	Evaluation: test or written examination (60%); group work (40%). Minimum required value, 9.50, in each component of the evaluation.								

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<p><b>Evidence of the syllabus coherence with the curricular unit's intended learning outcomes</b></p>	<p>The knowledge of the built heritage, the mechanisms of degradation of buildings, materials and intervention technologies are fundamental to the practice of engineering acts related to the maintenance and rehabilitation of buildings. The syllabus of the course allow you to develop the skills of students in the areas considered essential under the maintenance and rehabilitation of buildings, including giving them the knowledge and skills required to describe and characterize the materials and construction processes, define the objectives and methodologies of assistance, select appropriate rehabilitation and maintenance techniques.</p>
<p><b>Evidence of the teaching methodologies coherence with the curricular unit's intended learning</b></p>	<p>The teaching methodology employed allows students a solid theoretical training in the areas of maintenance and rehabilitation of buildings, coupled with the ability to intervene in the resolution of practical cases. The achievement of the goals set forth is based on expository method, as the main form of transmission of theoretical knowledge and practical case analysis, in particular applied to group work on specific cases, observed in buildings in service or under construction.</p>
<p><b>Bibliography</b></p>	<p>AGUIAR, José; CABRITA, Reis; APPLETON, João – Guião de apoio à reabilitação de edifícios habitacionais. (2 vols). NS 78. Lisboa, LNEC, 2011 (8ª edição)          Coias, Vítor - Inspeções e Ensaios na Reabilitação de edifícios, IST Press, Lisboa 2006.          FREITAS, V. P; SOUSA M. - Reabilitação de edifícios – Do diagnóstico à conclusão da obra. 3.ª Encore – Encontro sobre Conservação e Reabilitação de Edifícios. LNEC, Lisboa, Portugal, 2003.          LNEC – Conservação e reabilitação de edifícios recentes. Cadernos de edifícios CAD 5. Lisboa, LNEC, 2010 (1ª edição).          LNEC; Documentos Introdutórios do 1º Encontro sobre conservação e reabilitação de edifícios.          PAIVA, José; AGUIAR, José; PINHO Ana, Guia Técnico de Reabilitação Habitacional, INH/LNEC, 1ª Edição 2006.          PATORREB 2009 – 3º Encontro sobre patologia e reabilitação de edifícios</p>
<p><b>Observations</b></p>	