



DEGREE CURRICULUM  
**REFURBISHING 3**

Coordination: COLL MIRO, JOSEP

Academic year 2020-21

## Subject's general information

<b>Subject name</b>	REFURBISHING 3		
<b>Code</b>	101430		
<b>Semester</b>	1st Q(SEMESTER) CONTINUED EVALUATION		
<b>Typology</b>	<b>Degree</b>	<b>Course</b>	<b>Character</b>
	Bachelor's Degree in Architectural Technology and Building Construction	4	OPTIONAL
			<b>Modality</b>
			Attendance-based
<b>Course number of credits (ECTS)</b>	6		
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRAULA	TEORIA
	<b>Number of credits</b>	3	3
	<b>Number of groups</b>	1	1
<b>Coordination</b>	COLL MIRO, JOSEP		
<b>Department</b>	AGRICULTURAL AND FOREST ENGINEERING		
<b>Teaching load distribution between lectures and independent student work</b>	60 hours of class (40%) 90 hours of independent work (60%)		
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.		
<b>Language</b>	Catalan		

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
COLL MIRO, JOSEP	josep.coll@udl.cat	6	

## Subject's extra information

It is a complex subject and content shared with other subjects where we develop all aspects of the methodology of the project is that, in this case specifically rehabilitation.

Therefore students must acquire the knowledge sufficient for the technical and economic aspects, forming a structured, so that it can move in the world of execution.

It is basically a practical course (75%) and theoretical (25%). The course is focused on developing an individual or group (maximum of two students) to defend it in public, subject to the remaining questions by the students and the teacher.

It is assumed that the theory should be known, understood and applied in its entirety to the development of the work that will be proposed by the teacher or the student will choose under the go-ahead of professor course.

It is highly recommended to have passed and achieved favorable results in the subjects of Materials and Construction Systems and typologies. It is considered advisable to study the list of subjects of specialization Rehabilitation 1 and 2.

Electives will race in the 1st half of 4th grade education. It belongs to the module "Optional Training", specifically in the field "rehabilitation."

Requirements: 1 REHABILITATION

It is **COMPULSORY** that the students bring the following elements of individual protection (EPI) to the practices at the laboratory.

- White laboratory gown from UdL (unisex)
- Protection glasses
- Mechanical protection gloves
- Security helmet
- Reflective vest
- **Safety footwear (\*)**

All these items, with the exception of the safety footwear, can be purchased through the shop Údels of the UdL:

C/ Jaume II, 67 baixos  
Centre the Cultures i Cooperació Transfronterera

<http://www.publicacions.udl.cat/>

**(\*) The safety footwear must be acquired by the student to any individual protection equipment provider, and must meet the requirements S1 + P (head and antiforce template) according to what is established by EN ISO 20345**

The use of other elements of protection (for example caps, masks, gloves of chemical or electrical risk, etc.) will depend on the type of practice to be done. In that case, the teacher will inform of the necessity of specific EPI.

Not bringing the EPI's described or not fulfilling the norms of general security that are detailed below imply that the student can not access to the laboratories or have to go out of them. The no realisation of the practices for this reason imply the **consequences in the evaluation** of the subject that are described in this course guide.

## GENERAL NORMS OF SECURITY IN LABORATORY PRACTICES

- Keep the place of realisation of the practices clean and tidy. The table of work has to be free from backpacks, folders, coats...
- No short trousers or short skirts are allowed in the laboratory.
- Closed and covered footwear is compulsory in the laboratory.
- Long hair needs to be tied.
- Keep the laboratory gown laced in order to be protected from spills of chemicals.
- Bangles, pendants or wide sleeves are not allowed as they can be trapped.
- Avoid the use of contact lenses, since the effect of the chemical products is much bigger if they enter between the contact lense and the cornea. Protection over-glasses can be purchased.
- No food or drink is allowed in the laboratory.
- It is forbidden to smoke in the laboratories.
- Wash your hands whenever you have contact with a chemical product and before going out of the laboratory.
- Follow the instructions of the teacher and of the laboratory technicians and ask for any doubt on security.

For further information, you can check the following document of the *Servei de Prevenció de Riscos Laborals de la UdL*:

<http://www.sprl.udl.cat/alumnes/index.html>

## Learning objectives

- The aim of the subject is to acquire the knowledge and the core competitions in the field of rehabilitation and maintenance. Any intervention in an existent building involves the detailed knowledge of his construction, structural and typological systems, as well as a wide knowledge of the materials and traditional systems, for finally, make a critical and objective evaluation of the current state of the building at issue.
- Make a work with suitable technical language, orthographical and grammatical correction, with capacity of structuring, ordination and transmission of ideas and concepts that will result to a work (project) of rehabilitation of an existent real property considering all the appearances object of an intervention of rehabilitation, defining with precision and detail the interventions to make.
- Capacity to apply, know, interpret and develop the technical rule that orders the process of the building, and generate documents of technical specification of the procedures and constructive methods of buildings.
- Knowledge of the materials and traditional constructive systems or prefabricated used in the edification, his varieties and the physical and mechanical characteristics that define them.
- Aptitude for the predimensioning, design, calculation and verification of structures, and directing his material execution.
- Capacity to adapt the building materials to the typology and use of the building, manage and direct the reception and the control of quality of the materials, his commissioning work, the control of execution of the units of work and the implementation of the final tests.
- Apply sustainability criteria in the constructive process.
- Apply rehabilitation techniques with minimally invasive procedures and with affordable and realistic costs for constructive process at issue.
- Capacity to program and organise the constructive processes, the project team, and the technical and human resources for his execution and maintenance.
- Capacity for determine the causes and manifestations of the injuries in the buildings, propose solutions to avoid or resolve the pathologies, and analyse elements and constructive systems life cycle.
- Capacity to develop constructively the installations of the building, control, and programme his execution, and verify the tests of service and reception, as well as his maintenance.
- Stimulate classroom discussion of the works, while they learn to develop in public presentations in front of the rest of the group and of the professors.

## Competences

### Strategic competitions of the Universitat of Lleida :

- UdL2. Command of a foreign tongue

### Transversal competitions:

- EPS3. Capacity to transmit information, ideas, problems and solutions to a so much specialised public as no skilled.
- EPS7. Capacity to work in situations of fault of information and/or under pressure.
- EPS8. Capacity of planning and organisation of personal work.
- EPS9. Capacity of work in team, so much unidisciplinar like multidisciplinary.

### Specific competitions:

- GGE12. Knowledge of the materials and traditional constructive systems or prefabricated employees in the edificación, his varieties and the physical and mechanical characteristics that define them.
- GEE13. Capacity to adapt the materials of construction to the typology and use of the building, manage and direct the reception and the control of quality of the materials, his put in work, the control of execution of the units of work and the realisation of essays and final proofs.
- GEE15. Aptitude to identify the elements and constructive systems, define his function and compatibility, and his put in work in the process constructive. Pose and resolve constructive details.
- GEE17. Capacity for dictaminar on the causes and demonstrations of the injuries to the buildings, propose solutions to avoid or amend the pathologies, and analyse the cycle of useful life of the elements and constructive systems.
- GEE18. Aptitude to take part in the rehabilitation of buildings and in the restoration and conservation of the heritage built.
- GEE21. Capacity to apply the normative technician to the process of the edificación, and generate documents of technical specification of the procedures and constructive methods of buildings.
- GEE23. Aptitude pploughs the predimensionamientor, design, calculation and comprobación of structures and to direct his material execution.
- GEE24. Capacity to develop constructivamente the installations of the building, control and schedule his execution and verify the proofs of service and of reception, as well as his maintenance.
- GEE25. Capacity to program and organise the constructive processes, the teams of work, and the technical means and humans for his execution and maintenance.
- GEE29. Aptitude to analyse, design and execute solutions that facilitate the universal accessibility in the buildings and his surroundings.

## Subject contents

- Monographs: Covers, façades, ...
- Integral and partial rehabilitation. Professional attributions.
- Type of performances in rehabilitation, practical examples.
- Inspection; practical examples: tools, methodology, sketch.
- The previous studies and evaluation of the possible solutions.
- Cédulas Of habitability: Decree 141/2012 and previous.
- InformIs Technical Inspection Building (IITE) – Decree 67/2015.
- Honorarios Professional: How much voucher my work ?
- The project and his main characteristics; Program, written and graphic documentation , calculations, varied annexes
- Editorial of the work (project) of rehabilitation, aims and methodology.
- Practices of laboratory; TCQ and CE3X.
- Technical visit to building rehabilitated or in process of rehabilitation. (To determine)

## Methodology

The course divides in theoretical and practical classes or also itos podem designate workshops. The theoretical classes have by aim enter the different concepts and of the scientific and technological knowledge that they have to allow to the student attain the aims and competitions specify of the matter. The practical classes or workshops have by aim that the student develop the knowledges obtained in the theoretical classes and also product of his personal work of investigation, projecting all the knowledges on the final work that has to develop to surpass the subject.

It presents a listing in the formalisation of the two main axes that correspondin to the course with the incorporation of other important elements also to work:

- Theoretical exhibitions: theoretical knowledge.
- Practical sessions: practical knowledge.
- Discussions and personal opinions: interrelationship with personal and professional criterion.
- Practices: practical knowledge.
- Monographic works: abstraction and investigation.
- Exhibition of the work: communication in public.

## Development plan

Date	Class	Contents	Face-to-face hours	Hours of autonomous work
Week 1 to the 7	Lessons magistrales and study of cases	Theoretical contents, study of cases, debates to class, external visit and oral presentation.	26	39
Week 8	Readings	Delivery of practise compulsory or proof written.	4	
Week 9	1r Evaluation	Delivery of practise compulsory or proof written *.	2	
Week 10 to the 15	Workshop	Project of rehabilitation and practise classroom/laboratory.	20	30
Week 16 to the 17	2to Evaluation	Delivery and defends of the work (project).	4	
Week 19	Activity of recovery			

## Evaluation

1/. Assistance 10% and participation 10%. PPloughs the control of assistance will happen a leaf in class where the last student that the firm, will deliver it to the professor. A totime delivered will not admit but signatures. The hour and days of this control will be random. The control of the active participation managed it directly the professor.

2/. Two presentacionis oralis of the work chosen 15% (7,5%+7,5%). It will do n by groups (maximum two people) or individually and will consist in explaining by means of a PowerPoint of a no upper length of 6 minutes the first and no upper of 10 minutes the second and by the order that determine in class, explaining the different appearances of the work. The second presentation will correspond to the one of the already finalised work .

3/. Two practicas and/or pruebas escritindividual ace 15% (7,5%+7,5%). The delivery of one of them will be able to coincide with the same day and hour of the first partial. The delivery of the another warned conveniently. In the supposed that they did not do individual written proofs sand warnía with sufficient antelación the presentation of the same , if this is the model chosen pploughs this course.

4/. Final work 50%. This will present only in computer support (CD or equivalent, including all the files that have used for the preparation of the work) the day of the presentation in PowerPoint and his oral defence will do a week before the date of the partial second according to official calendar.

5/. The one who do not surpass the course in a first option, will have right to a proof or activity of recovery. This will carry out the day that the official calendar correspond with the second evaluation.

Since the presentations pretend to be a tool of work and of communication between the students of the class, the participation in debates and other questions on the presentacionis of the rest of the students will take into account like a positive element in the final evaluation.

Can give that in works in group, each one of the members have different notes even in the section two and four.

To approve the subject will have to have note of at least 5 (on 10) in the three sections; oral presentations, practical or proofs written and final work.

## Bibliography

### Recommended bibliography

- Graus Rovira, Ramon. [et al.]. Història de la construcció a la Catalunya Contemporànea. Barcelona: Ed. UPC, 2002.
- Maña i Reixach, Fructuós. El gros de l'obra. Barcelona: Ed. UPC, 2000
- Castro Villalba, Antonio. Història de la construcció arquitectónica. Barcelona: Ed. UPC, 1995 (3a ed. 1996).
- Díaz Gómez, César. [et al.]. El mantenimiento de los edificios (desde el inicio del proyecto al final de su vida útil). Barcelona: Ed. Col·legi d'Arquitectes de Catalunya i UPC, 1999.
- ITEC. Bellmunt Ribas, Rafael; Rius Almoynes, Mercè. Anàlisi del desenvolupament de la Rehabilitació a Espanya. Seminari, Barcelona: Institut de Tecnologia de la Construcció de Catalunya.1986.
- ITEC. Preus de referència d'edificació.
- Diccionari visual de la construcció . Departament de Política Territorial i Obres Públiques 204.
- Arte de proyectar en Arquitectura – Ernest Neufert – Gili Gaya

## Webs of interest:

Codigo Tecnico de la Edificacion.- [www.codigotecnico.org](http://www.codigotecnico.org)

ITEC - [www.itec.es](http://www.itec.es)

Col·legi d'Aparelladors i Arquitectes Tècnics de Lleida - [www.caatlleida.cat](http://www.caatlleida.cat)

Col·legi d'Aparelladors i Arquitectes Tècnics de Barcelona. - [www.apabcn.es](http://www.apabcn.es)

Agenda de la Construcció Sostenible - [www.csostenible.net](http://www.csostenible.net)

Arxiu digital de la UPM ( Universitat Politècnica de Madrid – <http://oa.upm.es/pfc.html>)

## Other bibliographic proposals for the reflection further of the subject:

Josep Maria González, Albert Cuchí, Joan Lluís Zamora, Laia Roca. Direcció de Fructuós Mañà.

Alternatives a la construcció convencional d'habitatges. ITEC. 2001.

Junichir? Tanizaki. El elogio de la sombra. Biblioteca de Ensayo. Ediciones Siruela. 14a ed. 2003.

Bruno Zevi. Saber ver la arquitectura. Coleccion Poseidón. Ediciones Apóstrofe SL. 1998.

Iñaki Alday, José Llinàs, José Antonio Martínez Lapena, Rafael Moneo. Aprendiendo detodas sus casas. Edicions UPC. ETSAV. 1996.

Gaston Bachelard. La poética del espacio. Breviarios Fondo de Cultura Economica. Ortega - Ediciones Gráficas. 1998, Madrid.

John Summerson. El lenguaje clásico de la arquitectura. - Editorial Gustavo Gili SA. 10a ed. 1996.

Robert Venturi. Complejidad y contradicción en la arquitectura. - Editorial Gustavo Gili SA. 8a ed. 1995.

Kenneth Frampton. Historia crítica de la arquitectura moderna. Editorial Gustavo Gili SA. 9a ed. 1998.

Leonardo Benévolo. Historia de la arquitectura moderna". - Editorial Gustavo Gili SA.

Giulio Carlo Argan. El arte moderno. - Ediciones Akal.