Date:	**REGISTRATION OF COURSES**	RESPONSIBLE OF REGISTRATION:

AREA OF KNOWLEDGE	**SUB-AREA**	**UNDERGRADUATE**	**POSTGRADUATE**
BASIC SCIENCES			
ECONOMICS AND SOCIAL SCIENCES			
HEALTH SCIENCES			
ENGINEERING, ARCHITECTURE AND TECHNOLOGY	**ARCHITECTURE**	**X**	
EDUCATION SCIENCES			
HUMANITIES AND ARTS			
AGRICULTURAL AND SEA SCIENCES			
MILITARY ARTS AND SCIENCES			
SAFETY AND CIVIL PROTECTION			
INTERDISCIPLINARY			
OTHERS			

ADSCRIPTION OR BRANCH (ES):

FACULTY	ARCHITECTURE AND URBANISM
SCHOOL	ARCHITECTURE “CARLOS RAÚL VILLANUEVA”
INSTITUTE	
DEPARTMENT	
OTHERS	

COURSE:

NAME	**PATHOLOGY AND CONSERVATION OF TRADITIONAL CONSTRUCTION TYPOLOGIES**
CODE	2153
EXECUTIVE UNIT	
CLASSIFICATION	ELECTIVE/ THEORETICAL
APPROVAL DATE	
UPDATE DATE	
APPROVAL AUTHORITY	
CREDIT UNITS	THREE (3)
HOURS/WEEK	THREE (3)
REGIMEN	
ACADEMIC PERIODS	REGULAR AND SUMMER SEMSTER
REQUIREMENTS	TECHNOLOGICAL APPLICATIONS CODE 2066

PURPOSES

The architectural conservation is a topic that architects generally study on postgraduate studies. The most part of this course possesses a noticeable emphasis on the theoretical and conceptual aspects of the activity. The technological aspects of interventions, preventive or corrective, are less treated on postgraduate programmes and are not taken into account on postgraduate studies.

The present program is aimed to undergraduate students in order to introduce them in the technical field of building conservation through the knowledge of traditional technics and materials, its pathologies and some of the most common intervention techniques. It pursues a double objective, the first one oriented to the preventive and corrective conservation of existing buildings and others, aimed to prevent and avoid further deterioration in buildings of a new floor plan, built by means of the traditional techniques.

Different typologies are presented, ordered according to the components parts of the building and following the own constructive sequence, that is to say, ascending from the soil until the superior parts; the variants of each typology are grouped according to the most frequent materials used.

LEARNING OBJECTIVES

That the student be capable of:

- Appreciate the current validity of traditional building techniques and materials.
- Know the possibilities and limitations in the use of traditional constructive typologies.
- Make an accurate diagnosis of the most common pathologies in traditional buildings.
- Take preventive conservation actions
- Make corrective interventions in the most common pathologies

CONTENTS

1. Finishes. Traditional construction materials. Timber. Earth. Stone. Lime. Plaster. Metals. Varieties, pathologies and treatments.
2. Foundations. Traditional foundations. Foundations failures. Foundations interventions.
3. Traditional walls. Walls built with casts. Walls built with masonry. Other types of walls. The most common injuries in traditional walls. Humidity in walls. Interventions in walls.
4. Voussoir systems. Arches. Vaults. Structural functioning. Failures in voussoir systems. Interventions in voussoir systems.
5. Roofs. Flat roofs. Sloping roofs. Framed roof. Eaves. Pathologies of different types of roofs. Roofs interventions.
6. Traditional mortars. Finishes of surfaces. Moulding. Paints. Roof endings. Most common pathologies on finishes of surfaces. Interventions.

INSTRUCTIONAL STRATEGIES

Presentation of typologies and its variants will be made following a methodological order composed in three parts:

- Traditional forms of execution; particularities and constructive details according to common use materials.
- The most common pathologies: manifestations and causes.
- Possible techniques of intervention: preventives and correctives.

INSTRUCTIONAL MEDIA

Different topics will be addressed employing the following modalities: master classes, and audio-visual presentations.

EVALUATION

The evaluation system of the course encompasses:

- Two partial written tests
- One final work with the diagnosis development and proposal design of the intervention of a real case, proposed by the student and accepted by the professor.

TEXTBOOKS (If possible, according to contents)

ARREDONDO, F.: "Cales 3". Estudio de Materiales. Madrid. Instituto E. Torroja. 1961.
ASHUERST, John: Mortars, plasters and renders in conservation. Londres. 1983.
BAGLIONI, Guarnerio: La rehabilitación de edificios urbanos. Barcelona. Edit. G. Gili. 1988.
CIGNI, Giuseppe. Il consolidamento murario. Roma. 1983.
Colectivo de Autores: Adobe en América y alrededor del mundo. Historia, conservación y uso contemporáneo. PNUD-UNESCO. 1984.
DOAT, P. et al: Construir con tierra. Bogotá. Fondo Rotatorio Editorial. 1990.
INSTITUTO EDUARDO TORROJA: Prescripciones de obras de fábrica. Madrid. 1971.
LOPEZ COLLADO, G.: Lesiones en los edificios. Síntomas, causas, reparaciones. Barcelona. Biblioteca de Arquitectura y construcción. 1981.
NUERE, Enrique: La carpintería de lo blanco. Lectura dibujada del primer manuscrito de Diego López de Arenas. Madrid. 1985.
NUERE, Enrique: Las cubiertas de madera en los
ORUS ASSO, F.: Materiales de construcción. Madrid. Edit. Dossat. 1963.
PIQUE, Javier et al: Manual de diseño para maderas del Grupo Andino. Lima. Junta del Acuerdo de Cartagena. 1984. Edificios antiguos. Primer curso de rehabilitación del COAAO. Sevilla. 1987.
RODRIGUEZ ROMO, F.: Características constructivas de los techos de armadura en Cuba. Boletín del Centro de Investigaciones Históricas y Estéticas, Universidad Central de Venezuela, Caracas, N°29.
RODRIGUEZ ROMO, F.: Morteros tradicionales de cal. Revista Ingeniería Civil, La Habana, N°1 de 1983.
Symposium November 1981. ICCROM. Mortars, cements and grouts used in the conservation of historic buildings. Rome.