

Decay of construction materials of monuments due to environmental causes: mechanisms and diagnostic techniques

This course is addressed towards architectural conservation by firstly identifying the decay mechanisms and patterns as a result of environmental parameters and weathering. The basic construction materials of the monuments and properties that influence their conservation state are taken into consideration and are correlated to the sustainability of the monuments. Diagnostic techniques, destructive and non-destructive, are presented in close relation to the results obtained on the state of conservation of monuments, both in lab and in-situ case studies.

The course aims at proving specific knowledge on the structure, microstructure, physico-chemical and mechanical properties of materials used in monuments and their weathering. The characterization of ancient building materials, as well as the identification of transformation products due to environmental loading, are quantified by using destructive and non-destructive diagnostic techniques. The interpretation of the diagnostic outcomes guarantees effective restoration and conservation procedures. Student performance is assessed by both elaborating a project relative to the objectives of the course and an oral examination.