# Μη Καταστροφικοί Έλεγχοι

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## Abstract

The proposed textbook deals with the entirety of non-destructive testing (NDT) methods, which are experimental techniques and methodologies aimed at studying the properties of materials and structures/constructions without causing damage. The data from non-destructive characterization are utilized for assessing the structural integrity and quality of materials and constructions. Monitoring the healthy operation of a material or a structure aims to evaluate the wear (aging) of the material or construction in real-time, during mechanical or environmental stress. Quality control and monitoring of healthy operation, based on non-destructive characterization with high reliability methods, are now an integral part of a wide range of technological applications (including terrestrial, maritime, aerospace, and space transportation, structural works, nuclear technology, recycling, environmental sustainability, etc.). It is noted that, although there are foreign-language books covering this subject to a greater or lesser extent, there is no corresponding textbook in Greek. This gap will be filled by the proposed textbook. Its thematic content includes fundamental knowledge for the entire spectrum of non-destructive testing techniques and specific cases (case studies) that demonstrate the application of these techniques in real damage assessments of materials and constructions. Specifically, methods such as ultrasonics, acoustic emission, infrared thermography, radiography, penetrant and visual inspection, magnetic particles, eddy currents, etc., will be discussed, while detailed specialized cases will be presented based on the authors' rich experience.