Dynamic identification and model updating of existing structures.

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This course will present methods for structural identification aimed at the model updating based on experimental data and the structural health monitoring. We show how to exploit measurements of structural response (e.g. strains, deflections, accelerations) for evaluating structural condition, with the purpose of both refining numerical models of structures and maintaining safe the infrastructure.

The course will include theory and algorithms for system identification as well as laboratory and field testing, thereby offering a well-rounded overview of the ways in which we may extract response data from structures. Moreover, the course will show an overview of the main strategies used for damage identification, including the use of Artificial Intelligence algorithms.

Upon completion of the course, the students will be able to analyse sensor signals for identifying characteristic structural properties, such as frequencies, mode shapes and damping, based on dynamic measurements of the structural response.