INSPECTION, RISK AND RESILIENCE ANALYSIS FOR ASSET MANAGEMENT PURPOSES

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Program:

Maintenance of existing transport infrastructure is a key issue for a proper asset management. Several hazards can affect structural safety of buildings and infrastructure components resulting in premature failures. Hence it is crucial to adopt suitable asset management systems able to collect field data together with advanced risk and resilience analysis frameworks to outline a priority ranking. This course aims to illustrate main concepts underlying these best practices, with special emphasis to applications on infrastructure components, like bridges. After an introduction on infrastructure management systems, the course will describe the state-of-the-art regarding inspection best practices, deterioration phenomena and pathologies usually detected, as well as condition state indicators and rating algorithms. The second part of the course will be devoted to the theoretical bases for a risk and resilience assessment, showing simplified and advanced methods for the characterization of hazard, vulnerability and consequence functions to be further used to compute risk and resilience indicators. Finally, some applicative examples will be illustrated considering different types of natural and man-made hazards.

References:

Hudson and Haas (1997) Infrastructure management: integrating design, construction, maintenance, rehabilitation and renovation. McGraw-Hill ISBN-13: 978-0070308954
Balzer and Schorn (2015) Asset management for infrastructure systems. Springer, ISBN: 978-3-319-17879-0
Gardoni (2018) Routledge Handbook of Sustainable and Resilient Infrastructure. Taylor & Francis, ISBN: 9781351392778.

Examination and grading:

Course attendants will be asked to perform a risk & resilience assessment for a case-study.

Course details:
The course will be offered in-person, allowing also online attendance.