

International Doctorate in Civil and Environmental Engineering

DOCTORAL COURSE – A.Y. 2020/21

Basic principles of seismic protection of structures through dissipative devices and seismic isolation

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Calendar	
Monday 07/06/2021 9:00 – 11:00	Wednesday 09/06/2021 11:00 – 13:00
Monday 14/06/2021 9:00 – 11:00	Wednesday 16/06/2021 11:00 – 13:00
Monday 21/06/2021 9:00 – 11:00	Wednesday 23/06/2021 12:00 – 14:00
Monday 28/06/2021 9:00 – 11:00	Wednesday 30/06/2021 11:00 – 13:00
Total	16 hours – 8 credits

Program
<p>The seismic design of structures has experienced an important development in the last century mainly thanks to the improvement of the knowledge about the structural behavior of constructions under seismic loadings and the leading idea of the whole design approach improvement can be individuated in the possibility of dissipating the seismic energy entering the structure in suitable locations, protecting therefore the structural elements carrying the vertical loads. This idea finds its purest application in the adoption of devices specifically designed to dissipate the seismic energy, granting a suitable and stable behavior during the earthquake and the possibility of substituting them after it.</p> <p>This short course will face the principles for understanding and designing structures equipped with dissipative devices and seismic isolation systems, supplying a general overview of the current state-of-the-art in terms of technological solutions and design approaches and discussing the most recent researches in this field. The problem of the seismic protection of structures will be formalized through the writing of the energy balance equations, that supply a clear idea of the possible strategies for the protection of the structure. The equations will be specialized on the base of the different typologies of the seismic protection systems and numerical examples will help in understanding the pros</p>

and cons of each solution. Finally, also more advanced systems, such as the semi-active and active ones, will be presented analyzing both their advantages and the reasons why they are seldom used specially in the European countries.