## UNIVERSITY OF PERUGIA\_DICA DEPARTMENT OF EXCELLENCE



UNIVERSITÀ DEGLI STUDI

**DI PERUGIA** 



DIPARTIMENTO DI INGEGNERIA CIVILE E AMBIENTALE DIPARTIMENTO DI ECCELLENZA

IYDRAULIC AND ARCHITECTUREAND

## CIVIL SAND ENVIRONMENTAL RENGINEERING INTERNATIONAL SCIENCES

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Ilaria Venanzi is currently Associate Professor at the Department of Civil and Environmental Engineering of University of Perugia. She received her Ph.D. in Civil Engineering in 2006 and she was post-doc and assistant Professor at University of Perugia. She has been visiting researcher at the Columbia University in New York for 6 months in 2004 - 2005. Dr. Venanzi has developed international scientific collaborations with several institutions among which the NIST at Washington D.C., the Technion, Israel Institute of Technology, the Northeastern

University in Boston. Dr. Venanzi has taught several courses of structural design and she has conducted research in Structural Health Monitoring, wind engineering, structural control, structural optimization, performance-based design and computational mechanics and has published extensively in the area of structural engineering and mechanics. PROBABILITY THEORY AND STATISTICAL METHODS FOR DATA ANALYSIS

Course duration: 12 hours (2 CFU)

Instructors:

Ilaria Venanzi, Ph.D., Associate Professor, University of Perugia Laura Ierimonti Ph.D., Post-doctoral fellow, University of Perugia (exercises and tutorials)

Course Description: The course is aimed at providing the basis of statistical analysis and probability theory. The main topics covered by the course are: definitions of probability; random variables; conditional distributions; random vectors; discrete and continuous probability distributions; statistical methods and tools for data analysis; parameters estimation; statistical hypothesis testing; Monte-Carlo method and data sampling; regression methods.

Classroom exercises using Matlab are proposed, relative to applications of the course topics to Civil and Environmental Engineering problems.

## Course Program:

January, 11th 2021 9:00-11:00 Probability distributions, random variables and random vectors, expectations and moments, functions of random variables. 11:00-13:00 Classroom exercises

January, 13th 2021 9:00-11:00 Continuous and discrete probability distributions, statistical inference, parameters estimation. 11:00-13:00 Classroom exercises

January, 15th 2021 8:30-11:00 Model verification, Monte-Carlo method and data sampling, linear models and linear regression. 11:00-13:30 Classroom exercises

Location: Teams platform - Campus of Engineering of University of Perugia Latitude: 43.118177 Longitude: 12.357942

Timetable: January 11-13-15, 9:00 a.m. – 1:00 p.m., Room 1 (CEEPhD Team)



For more info: Prof. Dr. Ilaria Venanzi (ilaria.venanzi@unipg.it) Prof. Dr. Filippo Ubertini, Ph.D. Program Coordinator (filippo.ubertini@unipg.it)

