A.D. 1308
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DIPARTIMENTO
DI INGEGNERIA
CIVILE E AMBIENTALE

CIVIL AND ENVIRONMENTAL ENGINEERING

DOCTORAL PROGRAM 2024-2025

Luca Valentini received his Master's degree in Physics from the University of Perugia and his PhD degree in Materials Science from the University of Napoli "Federico II". He is Associate Professor of Materials Science and Technology at the University of Perugia and chair of the courses of Applied Mechanics, Materials Technology and Laboratory of Materials at the University of Perugia. He is author of more than 160 publications in international journals with citation index in the fields of materials science, polymer physics and bionic composites. He is member of the Graphene Flagship and Associate Editor of Polymer and Composite materials topic of the journal Frontiers in Materials.

Antonella D'Alessandro is Associate Professor of Structural Design at the Department of Civil and Environmental Engineering of University of Perugia where she currently teaches Structures Design, Smart materials for Construction Engineering, Rehabilitation of structures. Her main expertizes are in the development and characterization of innovative multifunctional and sustainable structural materials (fiber-reinforced, self-sensing, recycled, high efficient), and the monitoring of the integrity of existing buildings, proved by the publication of more than 100 papers among national, international journals and conferences, and the participation of several national and international projects.

Daniel Triana currently is working as a researcher in electronic design and piezoelectric cement-based composites at Università degli Studi di Perugia, Italy (2023–present). Recognized with multiple awards, including Doctoral Thesis Laureate (2023), the Bicentennial Fellowship from the Colombian Ministry of Science (2020–2023), and two "Sun Clock" awards for best professor (2017, 2021). He is an electronic engineer with a MSc and PhD in Physics, specializing in experimental physics and electronic design. Over twelve years of experience as a university professor, teaching basic sciences (nanoscience, modern physics, waves, electromagnetism, mechanics) and electronics-related courses. Skilled in physicochemical characterization techniques, modeling and simulation, Python programming, electrochemical methods, and the development of cement-based piezoelectric composites

SMART MATERIALS FOR INTERACTIVE ENVIRONMENTS AND INTELLIGENT STRUCTURES

Instructors

Luca Valentini, Ph. D., Associate Professor
Antonella D'Alessandro, Ph.D., Associate Professor
Daniel Andrés Triana Camacho, Ph.D, Researcher
University of Perugia

Course Description

This course is a broad introduction to the principles of functioning of functional nanomaterials, with their operation in a variety of sensor architectures and modalities, including pressure, strain, thermal, optical and bioelectric. Illustrative applications in practical engineering problems, such as monitoring civil engineering structural components using smart concretes and smart bricks will be discussed. Students are required to complete laboratory tests, or simulations, and a final project consists on the proposal of a smart monitoring network for a civil engineering problem using smart materials.

Course Schedule (5 CFU)

Day 1, September 22nd, 14:30-18:30 AULA MAGNA
Day 2, September 23rd, 14:30-18:30 AULETTA
Day 3, September 29th, 14:30-18:30 AULETTA
Day 4, September 30th, 14:30-18:30 AULETTA
Day 5, October 6th, 14:30-18:30 ROOM SA
Day 6, October 7th, 14:30-18:30 ROOM 16
Day 7, October 13th, 14:30-18:30 AULETTA
Day 8, October 14th, 14:30-18:30 AULETTA

Location

Campus of Engineering of University of Perugia
Via G. Duranti, 93 - Perugia

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For more info Mrs. Teresa Nocera, Ph.D. Program Secretariat (teresa.nocera@unipg.it)
Prof. Dr. Filippo Ubertini, Ph.D. Program Coordinator (filippo.ubertini@unipg.it)