University of Pavia
PhD School of Electrical and Electronics Engineering and Computer Science
PhD School of Micro- and Nano- Electronics

A smart grid for energy management: new technologies

3rd – 6th June 2025 – Museo della Tecnica Elettrica, Via Ferrata 6 - Pavia

	Tuesday, June 3, 2025	Wednesday, June 4, 2025	Thursday, June 5, 2025	Friday, June 6, 2025
09.00 10.45	Paolo Di Barba, University of Pavia Introduction Roberto Napoli, Politecnico di Torino Opening lecture: Transition and Energy Communities at the Crossroads: Risks and Opportunities	Ezio Bassi, University of Pavia Active and reactive power regulation: an overview	Virginia Canazza, Key To Energy, Milano Electricity market	Maria E. Mognaschi, University of Pavia Environmetal compatibility and human body exposure
11.00 12.30	Cristian Bovo University of Pavia Power network definition and tools	Francesco Benzi, University of Pavia Industrial IoT Architectures and definition	Cristian Bovo, University of Pavia Continuous trading	Łukasz Januszkiewicz, Lodz University of Technology Wireless Communication for IoT in Smart Grids
14.00 15.30	Alessandro Bosisio, University of Pavia Smart Grid definition, technologies and tools	Pericle Zanchetta, University of Pavia Smart transformers and power electronics for the smart grid	Piero Malcovati, University of Pavia Measurement processes in electrical power networks 1	Francesco Gnesotto, University of Padova The future of energy: smart grid and nuclear fusion
16.00 17.30	Antonella Ferrara, University of Pavia Control and state estimation in modern power networks	Francesco Benzi, University of Pavia Smart meters for the Smart Grid	Piero Malcovati, University of Pavia Measurement processes in electrical power networks 2	Łukasz Januszkiewicz, Lodz University of Technology Physical layer of IoT in smart grid applications

Abstract

Nowadays, the availability of renewable and innovative energy sources makes the bidirectional energy flow between the grid and distributed sources a key concept, thus requiring a smarter control (Smart Grid). The course approach includes such relevant issues as a safe energy provision and environment sustainability, also asking for a systematic use of economic issues implied with the energy market. In this respect, the course aims at giving a general overview of systems and devices, characterizing the smart grid, as well as an insight on models, algorithms and strategies for the optimal distribution of energy resources. Smart Grid takes advantage of recent enabling technologies (IoT approach, cloud services, novel control strategies) and covers a large spectrum of disciplines, asking for a coordinated approach and merging different skills covered in this proposal by expert speakers.
On the other hand all these topics are not yet fully considered in engineering curricula, so that the proposed Course aims at bridging the gap. The course addresses to a broad audience including PhD students and young researcher, but also professional engineers operating in the industry area.

"The energy transition must deal with a suddenly and dramatically changed geopolitical scenario. The COP in Baku and President Trump's drastic decisions are the latest signs of the maturation of a new attitude towards the prerequisites of the transition, from anthropic responsibilities in the increase in global temperature to the definition of remedies and consequent forecasts.…The dilemma between green transition and just transition requires rapid choices, between risks of socio-economic catastrophes and opportunities for innovative relaunch.
… A disenchanted reflection on the state of things and on the possible options is therefore opportune."
From Roberto Napoli Opening Lecture Abstract

Organizing Committee
Francesco Benzi (Chair)
Paolo Di Barba
Roberto Galdi (Secretary)

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Ilaria Cristiani
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