Course name	Teacher	Scientific area	Target	Approach	Period	23-24	24-25
Advanced devices for high frequency applications	C. Ramella	DIS	Research group	Methodological	OCT-NOV	Yes	Yes
Advanced electric drives: modeling, design, and implementation	S. Rubino	ELT	IEEC	Methodological	SEP	No	Yes
Advanced iterative techniques for digital receivers	G. Montorsi	TLC	Research group	Methodological	MAY	No	No
Advanced Scientific Programming in MATLAB	P. Bardella/S. Scialò	DIS	ScuDo	Methodological	JAN-FEB	Yes	Yes
Advances Techniques for Optimization	P. Pirinoli	ELM	ScuDo	Methodological	JAN	No	Yes
Adversarial training of neural networks	D. Valsesia	TLC	IEEC	Methodological	MAR	Yes	Yes
Big data processing and programming	M. Trevisan/Vassio	TLC	IEEC+	Methodological	GEN	No	No
Characterization and planning of small-scale multi-generation systems	G. Chicco	ELT	IEEC	Methodological	SEP (one week intensive course)	No	Yes
Compressed sensing: theory and applications	G. Setti	ELN	ScuDo	Methodological	MAY	No	No
Computational (opto) electronics: a journey through device-level models	A. Tibaldi	DIS	Research group	Methodological	JULY	No	No
Computational electromagnetics in natural and in spectral domain	G. Lombardi	ELN	IEEC	Methodological	MAR-MAY	No	Yes
Data taxonomy and management in emerging smart electricity systems	P. Colella	ELT	IEEC	Methodological	SEP	No	No
Development and management of data-acquisition systems	A. Carullo	ELN	IEEC+	Methodological	JUNE	Yes	Yes
Dispositivi elettronici di potenza nella conversione di energia	S. Musumeci	ELT	IEEC	Methodological	MAY	Yes	Yes
Electric and magnetic field impact evaluation at industrial frequency	A. Canova	ELT	IEEC	Methodological	MAY	No	Yes
Electrical demand management	G. Chicco	ELT	IEEC+	Methodological	SEP (one week intensive course)	Yes	No
Electromagnetic dosimetry In MRI: computational and experimental methods	O. Bottauscio	ELT	Research group	Methodological	APR	No	Yes
Emerging Ultra-low Voltage, Ultra-low Power analog and mixed signal integrated circuits for the IoT	P. Crovetti	ELN	IEEC	Methodological	JUNE-JUL	Yes	Yes
Experimental modeling: costruzione di modelli da dati sperimentali	Taragna/Novara	AUT	ScuDo	Methodological	NOV-DEC	No	Yes
Instrumental methods of electrified interfaces	M. Serrapede	ELN	IEEC	Methodological	MAR	Yes	Yes
Integral Operators and Fast Solvers: a cross-disciplinary excursus on the best of FFT's companions	Francesco Andriulli	ELM	IEEC+	Methodological	NOV-JAN	Yes	No
Machine learning in energy applications	P. Lazzeroni	ELT	IEEC+	Methodological	SEP	No	Yes
Mathematical-physical theory of electromagnetism	L. Zilberti	ELT	IEEC+	Methodological	MAY	Yes	No
Metamaterials: Theory and multiphysics applications	L. Matekovits	ELM	ScuDo	Methodological	MAR-APR	Yes	No
Microelectronics for radiation detection-I	A. Rivetti	DIS	Research group	Methodological	MAG-JUN	Yes	No
Microelectronics for radiation detection-II	G. Mazza	DIS	IEEC	Methodological	MAY	No	Yes
Microwave sensing and imaging for innovative applications in health and food industry	J. Tobon	ELM	IEEC+	Methodological	FEB-MAR	Yes	No
Mining knowledge from complex networks	L. Vassio	TLC	IEEC+	Methodological	MAY	No	No
Nano & Molecular Electronics	G. Piccinini	ELN	IEEC	Informative	MAR-MAY	No	Yes
Nano & Quantum Computing	M. Graziano	ELN	IEEC	Informative	OCT	No	No
Nonequilibrium Green's functions modeling of optoelectronic devices	F. Bertazzi/Tibaldi	DIS	IEEC	Methodological	JUNE-JUL	No	Yes
Optical transport networks	V. Curri / A. Carena/ P. Bard	TLC	Research group	Methodological	FEB	Yes	Yes
Optimization methods for engineering problems	M. Repetto	ELT	ScuDo	Methodological	JUNE	Yes	No
Parameter identification and self-commissioning techniques for AC motor drives	Paolo Pescetto	ELT	IEEC	Methodological	SEP	Yes	No
Photonext: Hands on course on Photonics for Fiber Transmission	G. Rizzelli Martella	TLC	IEEC	Methodological	JUNE	Yes	No
Photonics: a key enabling technology for engineering applications	G. Perrone / Vallan	ELN	IEEC	Methodological	JUN-JUL	No	Yes
Photovoltaic generators and plants	F. Spertino	ELT	IEEC	Methodological	MAR	No	Yes
Power electronics for grid applications	R. Bojoi / F. Mandrile	ELT	IEEC	Methodological	MAR	Yes	Yes
Power systems economics	Huang Tao	ELT	IEEC+	Informative	JUNE	Yes	Yes
Quantum modelling of nanodevices: the density gradient approach	S. Donati Guerrieri	DIS	Research group	Methodological	JAN-FEB	No	Yes
Satellite Navigation signal exploitation for atmospheric and environmental monitoring	A. Minetto	TLC	IEEC	Methodological	MAY	Yes	No
Semiconductor light sources for engineers	M. Gioannini / L. Columbo	DIS	Research group	Methodological	JUNE	Yes	No
Spectral and Machine Learning Methods for Uncertainty Quantification	R. Trinchero	ELN	IEEC	Methodological	MAR-APR	Yes	No
System level low power techniques for IoT	M. Ruo Roch	ELN	IEEC	Methodological	JAN	Yes	Yes
Technologies for Low Power Wide Area Networks	D. Trinchero	ELM	IEEC	Methodological	MAY	No	No
Tecniche numeriche avanzate per l'analisi ed il progetto di antenne	F. Vipiana	ELM	IEEC+	Methodological	MAR	No	Yes
Telemedicine and Distributed Healthcare	G. Pagana	TLC	IEEC+	Methodological	MAR	Yes	No

Legend

ScuDo: course addressed to all the PhD students of the Doctorate School.

IEEC: course addressed to all the PhD students of the Doctorate in Electrical, Electronics and Communications Engineering (IEEC).

IEEC+: course addressed to all the PhD students of the Doctorate in Electrical, Electronics and Communications Engineering (IEEC) and of possible interest to the students of other doctorate programs.

Research group: these courses present specialized topics, mainly of interest for students working in the same research field

AUT: all PhD students in DET, associated to the academic discipline coded ING-INF/04 - Systems and Control Engineering

DIS: all PhD students belonging to the curriculum "Dispositivi Elettronici" ("Electron Devices") (including all students in DISAT and INFN).

ELM: all PhD students in DET, associated to the academic discipline coded ING-INF/02 - Electromagnetic fields

ELN: all PhD students in DET, associated to the academic disciplines coded ING-INF/01 (Electronics), ING-IND/31 (Electrical Engineering), and NOT registered within the curriculum "Dispositivi Elettronici" ("Electron Devices");

ELT: all PhD students in DENERG and associated to the academic disciplines coded ING-IND/31-32-33 (Electrical Engineering; Power electronic converters, electrical machines and drives; Electrical power systems).

TLC: all PhD students in DET, associated to the academic discipline coded ING-INF/03 (Telecommunications).