

Roma Tre Summer Course on Power Electronics and Applications

Organizer and Host Institution	Roma Tre University – Department of Engineering, Power Electronics and Electric Drives Laboratory, luca.solero@uniroma3.it
Technical Sponsorship	ECPE – European Center for Power Electronics
In cooperation with	Infineon Technologies, National Instruments, Semikron, Huawei Technologies, The University of Nottingham, ROHM Semiconductor, Sky Research, University of Roma Tor Vergata
Chairman	Fabio Crescimbin - <i>Roma Tre University</i>
<u>Lecturers</u>	Stefano Bifaretti - <i>University of Roma Tor Vergata</i> Fabio Brucchi, Gerald Deboy - <i>Infineon Technologies Austria AG</i> Valeriano Cardi – <i>Semikron</i> Petar Grbovic - <i>Huawei Technologies</i> Alessandro Lidozzi - <i>Roma Tre University</i> Mineo Miura, Vladimir Scarpa – <i>ROHM Semiconductor</i> Miodrag Veljkovic, Dragan Andric – <i>Sky Research</i> Pericle Zanchetta - <i>The University of Nottingham</i>

The course is scheduled in 2 weeks, 5 days a week, 30 hours lessons, 3 ECTS each week. Lecturers will be held during the 1st week, laboratory activities will take place during the 2nd week of the course. Each course week can be attended independently and as a single short course. The course is primarily intended for PhD and Master students; however, it is also open to staff of companies interested in the topic.

No fees for attending people.

Registration	Register before June 23, 2017. Please email a copy of the completed registration form to luca.solero@uniroma3.it
Venue	Roma Tre University, Department of Engineering Via della Vasca Navale, 79 – 00146 Roma, Italy Mechanical and Industrial Engineering Division, 2nd floor Conference Room n. dir.01, Ph. +39 06 5733 3277





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2017 Roma Tre Summer Course on <u>Power Electronics and Applications</u>	
Registration Form (email to luca.solero@uniroma3.it)	
Week 1, July 3-7 <input type="checkbox"/> Week 2, July 10-14 <input type="checkbox"/>	
Attendee:	
	<i>Title, Given Name, Name</i>
	<i>Company, Department</i>
	<i>Full Address</i>
	<i>Phone, Fax</i>
	<i>Email</i>
<i>Date, Signature</i>	



Roma Tre Summer Course on Power Electronics and Applications

Week 1 (3 ECTS) - Power Electronics and High Frequency: Devices and Control

Monday, July 3rd

10.15-10.30	Welcome, Introduction	F. Crescimbinì
10.30-12.45	Multi-Level & Multi-Cell Power Converters: A Way to go Beyond the Limits	P. Grbovic
14.00-15.45		
16.00-17.45	Design of Power Modules	V. Cardi

Tuesday, July 4th

09.15-11.00	Control in Power Electronics: from basics to model predictive	S. Bifaretti P. Zanchetta
11.00-12.45		
13.45-15.45	PED-Board: a control platform for Power Electronics and Drives Applications	A. Lidozzi
16.00-17.45	Power Electronics and Drives in More Electric Aircraft	P. Zanchetta

Wednesday, July 5th

09.15-11.45	SiC Growth Process SiC Device Design and Processing	M. Miura
11.45-12.45	Applications for SiC Devices	V. Scarpa
13.45-18.00	Tour at Semikron Italy Factory	V. Cardi

Thursday, July 6th

09.15-11.45	Superjunction Devices vs. GaN and SiC	G. Deboy
11.45-12.45	Design of Modern IGBT According to Application Requirements IGBT and FRD in Motor Drives Applications	F. Brucchi
14.00-15.45		
16.00-17.45	FPGA: a powerful device for high performance control	Greg Brown, Simone Suaria

Friday, July 7th

09.15-11.15	WBG Devices: Driving and Protection from Theory to Practice	P. Grbovic
11.15-13.15	Power Electronics for Harsh Applications	M. Veljkovic, D. Andric
14.30-15.30	Multiple Choice Survey	

Week 2 (3 ECTS) - Practice on Power Electronics (Hands-on class)

Instructors: A. Lidozzi, P. Grbovic

Monday July 10th 10.15-12.30 and 14.00-17.45

Tuesday July 11th to Thursday July 13th 09.15-12.45 and 14.00-17.45

Friday July 14th 09.15-12.45 and 14.00-15.45

Theory and practice on the new *PED-Board* equipped with the National Instruments sbRIO-9651 and Linux real-time OS. Insight view and develop of specific Power Electronics and Drives applications using LabVIEW integrated development environment.

- LabVIEW basic concepts, front panel and block diagram, debugging, programming guidelines. Application development. Graphical programming of the Real-Time and FPGA targets. Communication between targets. Code efficiency and best practices.
- Development of the FPGA main scheduler and PWM modulator. Extension to multilevel converter topology.
- Development of the Field Oriented Control for PM-Machines directly on the FPGA target.
- Development of the control structure for a Buck Power Converter using both Real-Time and FPGA capabilities. (*tentative*)
- Discussion on the lab sessions.

Control board info: www.ped-board.com