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Politecnico di Torino

Academic Year 2010/11 (first time established in A.Y.2007/08)

01LTDJA, 01LTDCH

Design for EMC Compliance

1st degree and Bachelor-level of the Bologna process in Electronic And Computer Engineering - Vercelli (III FACOLTA' DI INGEGNERIA)

Master of science-level of the Bologna process in Electronic Engineering - Vercelli (III FACOLTA' DI INGEGNERIA)

Teacher	Status	SSD	Les	Ex	Lab	Years Stability
Canavero Flavio	PO	ING-IND/31	5	0	0	1

SSD	CFU	Activities	Area context
ING-IND/31	5	C - Affini o integrative	Discipline ingegneristiche

Objectives of the course

All electronic equipment must be immune and correctly operate in the presence of sources of interference such as radio transmitters, electrostatic discharge etc. With an increase in wireless communications (e.g. mobile phones, wireless networking) there is an increasing likelihood of interference to the communications systems from other electronic equipment and a greater number of transmitters operating near potentially sensitive electronic equipment. Therefore designers must understand the electromagnetic behaviour of electronic systems and be able to design electromagnetically compatible products. This has been shown to be much more cost effective than fixing problems with a finished product. This course aims to provide designers the necessary knowledge to understand the issues and solutions in circuit and system design.

Expected skills

This advanced course, building from the behaviour of simple components, demonstrates how electronic systems behave from the point of view of the EMC Engineer. The students will learn, with a few simple calculations and application of design rules, how many EMC problems can be avoided before the system goes to test.

Prerequisites

Fundamentals of electromagnetics and digital and analogue electronics.

Syllabus

Design of circuits and systems to reduce generation of electromagnetic interference.
 Design of circuits and systems to increase their immunity to electromagnetic interference.
 Design of systems to comply with the EMC Directive.
 Physical layout including PCB layout for high speed digital circuits and analogue systems, effects of grounding, and wiring harnesses.
 Electromagnetic emission of analogue, digital and power switching circuits.
 Cable and enclosure screening including apertures and imperfections.
 System design.
 CAD for EMC: an overview of computational tools

Laboratories and/or exercises

Measurements demonstrations and case studies. Seminars of industry specialists in design and testing of electronic products.

Bibliography

Clayton R. Paul 'Introduction to Electromagnetic Compatibility' Wiley Series in Microwave and Optical Engineering, 2006

Revisions / Exam

Written examination plus oral discussion.

 Programma definitivo per l'A.A.2010/11


