Course Unit Description - (TEDSE)

(Test and Debug of Electronic Systems)

(Mestrado em Engenharia Electrotécnica e de Computadores)

Academic year: 2009/2010

isep

Subject group: Ciências Básicas da Electrotecnia

	Semestral	Optional		
Mode of study	Diurno	**Hours/Week**	**T-**Teórica	2
			PL-Prática-Laboratorial	2
Year	1º		**OT-**Orientação Tutorial	1
Semester	2º			

ECTS 6

Objectives

The course is related to the design and production of electronic components, focusing on the test of circuit boards. It includes an initial presentation of the entire manufacturing process in order to introduce the motivation for the test subjects included on the course.
The main objectives are the presentation and explanation of the concepts related to test and debug. Different types of test are discussed considering the lifecycle, application and technologies used on electronic systems. It is also expected that the students will gain competences on the use of test equipment.

Course Contents

1. Fundamental concepts of debug and test
2. Fault Modeling
3. Logic and Fault Simulation
4. Automatic test vector generation
5. Boundary Scan
6. Built-In Self Test
7. Specific digital circuit test
8. Analog and mixed-signal circuit test
9. Debug infrastructures and methodology
10. Alternative applications for debug and test infrastructures

Recommended reading

• The Nexus 5001 ForumTM Standard for a Global Embedded Processor Debug Interface, IEEE-ISTO, December 1999.
• IEEE Standard Test Access Port and Boundary-Scan Architecture, Oct. 1993, IEEE Std. 1149.1 (Includes IEEE Std. 1149.1a), ISBN 1-5593-7350-4
• IEEE Standard for a Mixed-Signal Test Bus, 1999, IEEE Standard 1149.4, ISBN 0-7381-1755-2
• Harry Bleeker, Peter van Den Eijnden e Frans de Jong, "Boundary-Scan Test: A Practical Approach", Kluwer Academic Publishers, 1993, ISBN 0-7923-9296-5
• Michael L. Bushnell, Vishwani D. Agrawal, "Essentials of Electronic Testing for Digital, Memory & Mixed-Signal VLSI Circuits", 2000, Kluwer Academic Publishers, ISBN 0-7923-799-1-8
• Miron Abramovici , Melvin A. Breuer , Arthur D. Friedman, "Digital Systems Testing & Testable Design", 1994, Wiley-IEEE Press, ISBN: 0-7803-1062-4

Teaching Methods

Presentation of theoretical concepts using powerpoint, video and interactive simulations.
Use of simulation environments.
Practical application of test systems and devices.

Assessment methods

50% of the grade is from an assignment executed during the course, mainly on the laboratorial classes. Several assignments are available for the students to choose from.
The remaining 50% are the result of a written test given at the course end.

	Name
Teacher responsible:	Andre Vaz da Silva Fidalgo (ANF)
Lecturer:	Andre Vaz da Silva Fidalgo (ANF)