

Course Unit Description - (TOMSA)

(Mathematic Topics for Autonomous Systems)

(Mestrado em Engenharia Electrotécnica e de Computadores)

Academic year: 2009/2010



Subject group: Álgebra e Análise

	Semestral	Optional	
Mode of study	Diurno	Hours/Week	T-Teórica 2
Year	1 ^o		PL-Prática-Laboratorial 2
Semester	1 ^o		OT-Orientação Tutorial 1
ECTS		3	

Objectives

Firstly, it is important to try making homogeneous the knowledge of the students with different experiences. Furthermore, the main objective of this course is to learn mathematical concepts in such a way that the students get the ability to think mathematically and also to apply some tools for solving problems in the electrical engineering.

Course Contents

1. Matrix Operations.
2. Linear Transformations.
3. Eigenvectors and Eigenvalues of an Matrix. Symmetric Matrices and Quadratic Forms.
4. Discrete-Time Signals and Systems- Discrete-Time Linear Time-Invariant Systems.
5. The Z Transform: definition, properties and applications.
6. State Variables for Discrete-Time Systems: Introduction and applications.

Recommended reading

1. Kreyszig, Erwin, Advanced Engineering Mathematics, John Wiley & Sons, 2006.
2. Karris, Steven T., Signals and Systems, Orchard Publications, 2008.
3. Oppenheim, Alan V. and Willsky, Alan S., Signals & Systems, Prentice-Hall, 1997.

Teaching Methods

The contents are introduced in the theoretical classes focusing the concepts and its illustrations that will be complemented with applications in laboratorial classes that are developed by students working in groups, using the MatLab Software.

Assessment methods

The evaluation will be completely continuous consisting of two tests by trimester and a few solved problems.

	Name
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