SUBJECT TEACHING GUIDE

G711 - Further Automation

Degree in Industrial Technologies Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Industrial Technologies Engineering			Type and Year	Compulsory. Year 3
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Further Electronics and Automation Module: Selection of Specific Technologies				
Course unit title and code	G711 - Further Automation				
Number of ECTS credits allocated	6	Term		Semester based (2)	
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. TECNOLOGIA ELECTRONICA E INGENIERIA DE SISTEMAS Y AUTOMATICA
Name of lecturer	LUCIANO ALONSO RENTERIA
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Other lecturers	MARIA SANDRA ROBLA GOMEZ

3.1 LEARNING OUTCOMES

- Obtaining skills and abilities in analysis and design of control systems with computer.

4. OBJECTIVES

Obtain the mathematical model of discrete control systems.
Study of techniques for sampling and reconstruction of signals.
Analysis of the temporal behavior of control systems with computer.
Design of discrete systems using different techniques.
Implantation techniques.

6. SUBJECT PROGRAM

CONTENTS	
1	DESIGN OF CONTINUOUS REGULATORS Design of continuous regulators in the time domain Design of continuous regulators in the frequency domain
2	ANALYSIS OF CONTROL SYSTEMS WITH COMPUTER Mathematical model Sampling and reconstruction Discrete equivalent Stability Temporal analysis
3	DISCREET DESIGN REGULATORS Discretization of continuous regulators Design by root locus Frequency Design Direct method

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
First theory control	Written exam	No	Yes	30,00
First laboratory control	Laboratory evaluation	No	Yes	20,00
Final theory exam	Written exam	Yes	Yes	30,00
Final laboratory exam	Laboratory evaluation	Yes	Yes	20,00
TOTAL				100,00

Observations
De no poder realizarse de forma presencial serán sustituidas por evaluaciones a distancia.
Observations for part-time students
Final exam with theoretical part (60%) and practical part (40%)

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

K.J. Amstrong and B. Wittenmark. "Sistemas controlados por computador". Ed. Paraninfo, 1988.

R. Aracil y A. Jimenez. "Sistemas Discretos de Control: Representación externa". Sección Publicaciones de E.T.S.I.I.M. Madrid,1987.

J.R. Llata, E. González, D. Fernández, J. Arce y J. Pérez Oria. "Problemas de Ingheniería de Sistemas: Sistemas Discretos". Ediciones TDG, 2000

J. Pérez Oria y S. Arnaltes. "Introducción a los Sistemas de Control con Computador". Editorial Ciencia 3. Madrid, 1993

K. Ogata. "Ingeniería de Control moderna". PEARSON EDUCACIÓN, S.A., Madrid, 2010. ISBN: 978-84-8322-660-5

K. Ogata. "Discrete Time Control System". Prentice-Hall, 1987

Ch.L. Philips and H.T. Nagle. "Digital Control System: Analysis and Design". Prentice-Hall N.J., 1984