UNIVERSITÀ DI PAVIA

Anno Accademico 2018/2019

PROCESS CONTROL

Enrollment year	2018/2019
Academic year	2018/2019
Regulations	DM270
Academic discipline	ING-INF/04 (AUTOMATICS)
Department	DEPARTMENT OF ELECTRICAL,COMPUTER AND BIOMEDICAL ENGINEERING
Course	COMPUTER ENGINEERING
Curriculum	Embedded and Control Systems
Year of study	1°
Period	1st semester (01/10/2018 - 18/01/2019)
ECTS	6
Lesson hours	45 lesson hours
Language	
Activity type	WRITTEN AND ORAL TEST
Teacher	FERRARA ANTONELLA (titolare) - 6 ECTS
Prerequisites	Knowledge acquired in previous courses in Automatic Control and Mathematical Methods in Engineering.
Learning outcomes	The course describes and analyzes control schemes which are frequently used at industrial level. It also provides the basics for the design of digital control systems.
Course contents	Industrial control schemes: Cascade control, open loop control, filtering of the reference signal, compensation of measurable disturbances, two degrees of freedom control schemes, Smith Predictor, decentralized control, relative gain array, decoupling schemes. PID controllers Features and properties. Rules for the empirical calibration. Wind-up

	and anti wind-up schemes. Digital control: Discrete-time systems. The concept of equilibrium for discrete-time systems. Stability. Stability of linear time-invariant discrete-time systems. Jury test. Digital control schemes. Sampling problem. Choice of the sampling time. Discretization of continuous-time controllers. Euler and Tustin methods.
Teaching methods	Lectures (hours/year in lecture theatre): 45 Practical class (hours/year in lecture theatre): 0 Practicals / Workshops (hours/year in lecture theatre): 0
Reccomended or required readings	Lecture notes Paolo Bolzern, Riccardo Scattolini, Nicola Schiavoni. Fondamenti di controlli automatici. McGraw-Hill, Milano. (In Italian). Carlos A. Smith, Armando B. Corripio. Principles and Practices of Automatic Process Control. John Wiley and Sons.
Assessment methods	Closed-book, closed-notes, 2 hour written exam consisting of 1-2 sections assessing knwoledge and understanding of the course topics and ability to apply them in a problem solving context. Each section will be independently graded. Threshold to pass is 18/30 an maximum mark is 30/30 cum laude. The final mark is obtained as the weighted mean of marks given to each section of the written exam. Example of a written exam: http://sisdin.unipv.it/labsisdin/teaching/courses/procon/files/Process_Control_Exam_Example.pdf
Further information	
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile