UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

INDUSTRIAL CONTROL

Anno immatricolazione	2020/2021
Anno offerta	2021/2022
Normativa	DM270
SSD	ING-INF/04 (AUTOMATICA)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	INGEGNERIA ELETTRICA
Curriculum	Sistemi elettrici
Anno di corso	2°
Periodo didattico	Secondo Semestre (07/03/2022 - 17/06/2022)
Crediti	6
Ore	58 ore di attività frontale
Lingua insegnamento	English
Tipo esame	SCRITTO
Docente	MAGNI LALO (titolare) - 4 CFU MAESTRE TORREBLANCA JOSE' MARIA - 1 CFU TOFFANIN CHIARA - 1 CFU
Prerequisiti	Basic concept of Automatic Control. Discrete-time systems and elements of the Digital Control are useful.
Obiettivi formativi	The course aims to introduce students to the main methods of synthesis of controllers for multivariable linear continuous-time and discrete-time dynamical systems. The definitions of sensitivity, complementary sensitivity and control sensitivity function are extended and their characteristics are analyzed using appropriately defined performance indices. State estimation for deterministic and stochastic systems are presented with particular emphasis on the Kalman filtering.
Programma e contenuti	Multivariable systems Sensitivity, complementary sensitivity and control sensitivity function.

	Representations of uncertainty. Analysis of robustness and performance. Linear Quadratic Control Problem formulation, solution algorithms, properties of robustness. State estimator Estimators for deterministic systems. Kalman filter and predictor. Linearized and extended predictor. Applications to the estimation of uncertain parameters and diagnostics industry. H2 control. Model Predictive Control Problem definition. Open and clsed-loop solution. Stability.
Metodi didattici	Theoretical face-to-face lectures, blackboard exercises, Matlab exercises on the computer are provided.
Testi di riferimento	MAGNI L., R. SCATTOLINI, “Advanced and multivariable control”, Pitagora Editrice Bologna, 2014.
Modalità verifica apprendimento	Project discussion and oral examination in the first exam date at the end of the course or written examination in all the other exam dates.
Altre informazioni	
Obiettivi Agenda 2030 per lo sviluppo sostenibile	$lbl_legenda_sviluppo_sostenibile