UNIVERSITÀ DI PAVIA

Anno Accademico 2020/2021

AUTOMATED MECHANICAL SYSTEM DESIGN

Anno immatricolazione	2020/2021
Anno offerta	2020/2021
Normativa	DM270
SSD	ING-IND/13 (MECCANICA APPLICATA ALLE MACCHINE)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	INDUSTRIAL AUTOMATION ENGINEERING - INGEGNERIA DELL'AUTOMAZIONE INDUSTRIALE
Curriculum	PERCORSO COMUNE
Anno di corso	1°
Periodo didattico	Secondo Semestre (08/03/2021 - 14/06/2021)
Crediti	6
Ore	62 ore di attività frontale
Lingua insegnamento	English
Tipo esame	ORALE
Docente	GIBERTI HERMES (titolare) - 6 CFU
Prerequisiti	Knowledge of “Applied mechanics”
Obiettivi formativi	The course introduces the student to the design issues involved with the special machinery widely used in the manufacturing industry. In particular, knowledge, methodologies for choosing, analysing and synthesizing the most commonly used mechanical, pneumatic, hydraulic and electric actuators for automation systems are covered.
Programma e contenuti	Design of an automated machine: Introduction to the automation issues of a production process, why automation is necessary, the steps required for designing and developing an automated machine and the classification of automated machine Design of movement:

	The classification of movements, definition of motion curves for automation and proprieties of the acceleration diagram, principal requirements and optimisation of a motion curve. Outlines of mechanical actuation systems: The classification of the mechanical actuation systems, movement transmission and overview of the principal devices used. Outlines of fluid power actuation systems: The introduction of fluid power systems, classification and overview of the most commonly used devices Outlines of electromagnetic actuation systems: overview of the principal devices used in the automation field and introduction to the methodologies of sizing asynchronous and brushless motors. Outlines of unconventional Actuators.
Metodi didattici	Lessons are combined with practical exercises in the IT classroom with the object of analysing and synthesising the systems being studied.
Testi di riferimento	Lectures and practical exercises • Actuators: Basics and Applications, Editors: Janocha, Hartmut (Ed.), ISBN 978-3-662-05587-8 • Design of Automatic Machinery, Stephen J. Derby, ISBN 9781420030846 • Design and Analysis of Mechanisms: A Planar Approach, Michael J. Rider, ISBN: 978-1-119-05433-7
Modalità verifica apprendimento	The exam is conducted by way of an oral test. Attendance at lectures and practice is not mandatory. A report on application laboratories is not compulsory
Altre informazioni	.
Obiettivi Agenda 2030 per lo sviluppo sostenibile	$lbl_legenda_sviluppo_sostenibile