

COURSE GUIDE – short form

Academic year 2014-2015

Course name	Data Acquisition Systems And Interfaces					Course code	MCT.401. DI.DS.		
Course type	DS	Category	DI	Year of study	4	Semester	7	Number of credit points	3

Faculty	Faculty of Mechanical Engineering	Number of teaching and learning hours						
Field	Mechatronics and Robotics; Mechanical Engineering.	Total	L	T	LB	P	IS	
Specialization	Mechatronics; Robotics; Mechanical Engineering.	42	28	-	14	-	2	

Pre-requisites from the curriculum	Compulsory	Mathematics, Vibrations
	Recommended	Electronics, Electrotechnics, Sensors and transducers

General objective	The course aims to familiarize students with the basic principles of data acquisition, with fundamental notions of data acquisition systems, statistical, analog and digital information processing, mathematical transformations performed in data acquisition systems, analog and digital filtering and the phenomenon of aliasing. The applications aim to strengthen the knowledge, being presented practical schemes and programs for data acquisition, with practical examples in MATLAB, LabVIEW and SIMULINK.
Specific objectives	The course aims to deepen specific knowledge: <ul style="list-style-type: none"> • Getting the analog and digital data acquisition; • Statistical processing of the acquired data; • Mathematical transformations applied in DAQ. Structures of data acquisition boards; • Types of filters and filtering performed in data acquisition systems; The laboratory is dedicated to: <ul style="list-style-type: none"> • Data acquisition using National Instruments data acquisition boards (NI-DAQ); • Time and frequency analysis of signals; Signal processing in Matlab and LabVIEW; • Tensometry and strain gauge measurements - practical application;
Course description	<u>Course</u> : Signals; Statistical processing of signals; Mathematical transformations applied to signals; Data acquisition; Sampling signals; Dithering signals; The phenomenon of aliasing; Correlation function, autocorrelation amplitude-frequency spectra, power spectra; Types of filters and filtering signals; <u>Laboratory</u> : signal acquisition from the sound cards and NI-DAQ boards; Frequency analysis of systems; Signal processing in LabVIEW, MATLAB and SIMULINK; Tensometry and strain gauge measurements.

Assessment			Schedule	Percentage of the final grade (minimum grade)
Continuous assessment	Class tests along the semester		-	%
	Activity during laboratory works		weeks 1-14	40 %
	Assignments		-	%
Final assessment	Final assessment form	Colloquium	week 14	60 %
	Examination procedures and conditions: 1. Colloquium; tasks - multiple choice test; working conditions - M (traditional and computer); percent of the final grade 60%; 2. Laboratory; tasks - Activity during laboratory; working conditions - Practical and Computer (M); percent of the final grade 40%			

Course organizer	Associate professor, PhD eng, VIOREL PALEU	
Teaching assistants	Associate professor, PhD eng, VIOREL PALEU	

