Study program	Level of studies		**Third cycle**	
	Title of the study program		**Doctoral studies in physics**	
Course title	**DATA ACQUISITION**			
Course ID	Semester	Course status	ECTS credits	Teaching hours
PCM7051	**I /II**	**Elective**	**10**	**30**
Course aims and expected learning outcomes	**The goal of this course is to introduce students to the real-time data acquisition using PC and different platforms for mesuring sensor signals and communication with the measuring devices.** **It is expected that after finishing the course, student will be able to write source code and implement data acquisition protocols needed for experiments.**			

COURSE CONTENT

Sensor types and implementation – temperature sensors, optical sensors, force and pressure sensors, magnetic field sensors, position senzors, etc. Analog to digital and digitial to analog converters. Communication with measuring devices. Platforms for interaction with sensors. PC hardware for communication with sensors and measuring devices. Software for data acquisition.

Introduction to Python. Communication with sensors and measuring devices using Python.

Practical implementation – communication between PC and measuing devices using serial and parallel ports.

LITERATURE	ASSESSMENT OF LEARNING	
1. Lecture notes. 2. M. Di Paolo Emilio, Data Acquisition System: From Fundamentals to Applied Design (Springer New York, 2013). 3. Pyvisa: Control your instruments with Python (https://pyvisa.readthedocs.io/en/latest/). 4. NI-VISA: Programmer Reference Manual.	Assessment Method	Points
	Final exam	40
	Practical work	60
	Total	100

Remarks

Practical work will require from students to implement thereotical knowledge in real-world experiment and to write a report which will be presented and defended.