

**COURSE TITLE: Graphical programming in LabVIEW**

**Institute/Division:** Faculty of Electrical and Computer Engineering/E2

**Number of contact hours:** 45 (15h lectures, 30h laboratory)

**Course duration:** 1 semester ETCS credits: 6

**Erasmus subject code** 0714 Electronics and automation

**1. Objectives of the course**

Objective 1 Practical skills LabView programming environment.

Objective 2 The ability to carry out the tasks of computing using a computer program.

Objective 3 Simulation of electrical issues in your computing environment

**2. Prerequisites in terms of knowledge, skills and other competencies**

1 Basic skills in structured programming.

2 Knowledge of the course in physics and mathematics.

**3. Education effects**

EK1 Knowledge: Knowledge of controls and indicators used in the LabView programming environment.

EK2 Skills: Ability to create modification and inspection of the data vectors in LabView environment.

EK3 Skills: Ability to use advanced mathematical operations in programming in LabView. Ability to program using scripting languages.

EK4 Skills: Ability to build web applications in LabView environment, support for TCP UDP applications and client-server.

EK5 Skills Ability to use LabView environment for data acquisition hardware devices.

**4. Course contents**

The content of lectures and laboratory classes:

- Using software and navigation in LabVIEW.
- LabView program structure, controls, indicators, constants and data types. Arithmetic in LabView.
- Creating software documentation, testing, and eliminate errors.
- Structured programming. Sequence programming, application type construction loops, conditional statements, shift registers. Create vectors, matrices, arrays and clusters.
- Operations on arrays, numeric variables, and text. File operations. Reading and writing of data.
- Advanced mathematical operations in LabView. Support scripting languages.
- Implementation of algorithms based on numeric variables and text.
- Presentation of the results on the charts, writing and reading data from a file.
- Construction of applications based on the structure of a state machine.
- Configuring and Using the measuring card.
- Network applications in LabView. TCP and UDP applications, client-server in LabView.

- Programming using the properties of the object classes.
- Building your own controls, subroutines and complex applications in LabView.
- Create and distribute the application .exe application.

### **5. Teaching Tools**

Lectures, computer laboratory, multimedia presentations, practical exercises, consultation

### **6. Methods of evaluation**

CLAD exam at the end of the class under the NI LabVIEW Academy program.

[http://www.ni.com/academic/labview\\_academy.htm](http://www.ni.com/academic/labview_academy.htm)

### **7. List of references**

1. LabVIEW Core 1 Course Manual – National Instruments Corporation
2. LabVIEW Core 2 Course Manual – National Instruments Corporation

### **8. Information about academic teachers**

The person responsible for the card:

dr inż. Maciej Sułowicz (contact: pesulowi@cyf-kr.edu.pl)

Persons engaged in the subject: dr inż. Krzysztof Gądek (contact: krzysztof.gadek@gmail.com)

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