

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

#### 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)

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