FACULTY OF ELECTRICAL ENGINEERING

SUBJECT CARD

Name in Polish:	**Programowanie obiektowe**
Name in English:	**Object-oriented programming**
Main field of study (if applicable):	**Control Engineering and Robotics**
Specialization (if applicable):	**Automation of Machines, Vehicles and Apparatus**
Level and form of studies:	**2nd level, full-time**
Kind of subject:	**obligatory**
Subject code:	**ARR043223**
Group of courses:	**NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	15		15		
Number of hours of total student workload (CNPS):	30		60		
Form of crediting:	crediting with grade		crediting with grade		
For group of courses mark (X) final course:					
Number of ECTS points:	1		2		
including number of ECTS points for practical (P) classes :			2		
including number of ECTS points for direct teacher-student contact (BK) classes:	0.70		1.40		

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Basic knowledge on creating algorithms.
2. Basic ability to create computer algorithms.
3. It has the basic skills related to programming PC.
4. He understands a need to participate in activities to improve their skills and acquire new knowledge.

SUBJECT OBJECTIVES

C1. Familiarize students with the theoretical knowledge of the object-oriented programming.

C2. Familiarize students with a basic working knowledge on computer programming using tools based on object-oriented programming.

C3. The acquisition and consolidation of social competences including emotional intelligence involving the ability to work in a group of students with a view to effective problem solving. Responsibility, honesty and fairness in the procedure observance in force in academia and society.

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W01 He knows what it is object-oriented programming and knows the basic features.

PEK_W02 He knows how to use object-oriented programming to write a computer program solves the given algorithm.

relating to skills:

PEK_U01 He can write a program in the selected language of object oriented programming by using appropriate programming methods.

PEK_U02 He can analyze the written program to find and fix bugs of its operation.

relating to social competences:

PEK_K01 The acquisition and consolidation of competence in the independent and creative thinking.

PROGRAMME CONTENT		
Form of classes - lecture		**Number of hours:**
Lec 1	Introductory lecture. Basic definitions. Object oriented programming - introduction.	2
Lec 2	The structures and functions of the classes and methods. Constructors and destructors.	2
Lec 3	The modifier const references. Description of data structures and their use.	2
Lec 4	Features classes and their templates.	2
Lec 5	Inheritance - the basic rules of application. Methods and directions projection: projection up and down.	2
Lec 6	Handling Exceptions in object-oriented programming. Rules of respect names.	2
Lec 7	Graphic elements in object-oriented programming.	2
Lec 8	Written test.	1
	Total hours:	**15**

Form of classes - laboratory		**Number of hours:**
Lab 1	Introduction to the rules and regulations of internal safety lab. General familiarization with laboratory equipment and development enviroment.	2
Lab 2	Introductory exercise: description of the environment, making the sample project.	2
Lab 3	Writing programs with complex data types, operators and object-oriented programming elements.	2
Lab 4	Writing programs using the procedures of control the program sequence with elements of object-oriented programming.	2
Lab 5	Writing programs using a graphical user interface and object-oriented programming elements.	6
Lab 6	Pass of the labs.	1
	Total hours:	**15**

TEACHING TOOLS USED

N1. Lecture using modern multimedia techniques.
N2. Individual work, preparation for exercise.
N3. Consultation.
N4. Traditionally carried out laboratory.
N5. Lecture - final test.
N6. Laboratory – pass of labs.

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation *F – forming (during semester) P – concluding (at semester end)*	**Educational effect number**	**Way of evaluating educational effect achievement**
F1(W)	PEK_W01 PEK_W02	Pass written.
P(W)	P=F1	
F1(L)	PEK_U01 PEK_U02	Activity in laboratory classes.
F2(L)	PEK_U01 PEK_U02	Assesment of written programs.
P(L)	P=0,3*F1+0,7*F2	

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] Liberty J., Siddhartha R., Bradley J., C++ dla każdego. Poznaj język C++ w 21 dni, Wyd. Helion, Gliwice 2011
[2] Prata S., Język C++. Szkoła programowania. Wyd. V., Wyd. Helion, 2006
[3] Stroustrup B., Język C++, Wyd. WNT,Warszawa 2002
[4] Bjarne s., Programming: principles and practice using C++, Upper Saddle River, NJ : Addison-Wesley, cop. 2009.

SECONDARY LITERATURE:

[1] Huzar Zb., Information systems modelling and analysis, Wyd. Wroclaw University of Technology, 2011
[2] McLaughlin B., Pollice G., West D., Analiza I projektowanie objektowe, Wyd. Helion 2010

SUBJECT SUPERVISOR

Krzysztof Dyrcz, krzysztof.dyrcz@pwr.edu.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
ARR043223 - Object-oriented programming
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Control Engineering and Robotics**
AND SPECIALIZATION **Automation of Machines, Vehicles and Apparatus**

Subject educational effect	Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)	Subject objectives	Programme content	Teaching tool number
PEK_W01	S2AMPU_W09	C.1	Lec1 Lec2 Lec3 Lec4 Lec5 Lec6 Lec7 Lec8	N.1 N.3 N.5
PEK_W02	S2AMPU_W09	C.1	Lec1 Lec2 Lec3 Lec4 Lec5 Lec6 Lec7 Lec8	N.1 N.3 N.5
PEK_U01	S2AMPU_U08	C.2	Lab1 Lab2 Lab3 Lab4 Lab5 Lab6	N.2 N.3 N.4 N.6
PEK_U02	S2AMPU_U08	C.2	Lab1 Lab2 Lab3 Lab4 Lab5 Lab6	N.2 N.3 N.4 N.6
PEK_K01	K2AiR_K06	C.3	Lec1 Lec2 Lec3 Lec4 Lec5 Lec6 Lec7 Lec8 Lab1 Lab2 Lab3 Lab4 Lab5 Lab6	N.1 N.2 N.3 N.4 N.5 N.6