Bialystok University of Technology									
Field of study	**Computer Science**							**Degree level and programme type**	**Engineer's degree full-time programme**
Specialization/ diploma path	**---**							**Study profile**	academic
Course name	**Object Oriented Programming**							**Course code**	**FCS-00012**
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	**Semester**	2
	30				30			**No. of ECTS credits**	**6**

Entry requirements	Programming Basics (FCS-00031),
Course objectives	Learning the base object-oriented programming techniques and their using in Java. Learning the practical applications of these techniques in simple programs written in Java.
Course content	Lecture: Concept of classes, objects, fields, methods. Preparing the class diagram from the text specification. Creation and destruction of objects. Interface and implementation of classes, encapsulation. Static class components. Composition and inheritance as the methods for the class reusability. Polymorphism. Inner classes. Runtime errors, exceptions. Generic classes - dependent on the type. Specialization workshop: Construction and destruction of objects. Writing new classes. Application of encapsulation. Using composition and inheritance to create new classes. Run-time type identification. Calling virtual methods. Using exceptions to handle run-time errors. Using interface types. Writing generic classes. Designing classes based on text system description.
Teaching methods	informative lecture, lecture problem, programming,
Assessment method	Lecture: Final test covering the main techniques of the object oriented programming. Specialization workshop: short programs written in Java by students, presented and explained orally to the teacher

Symbol of learning outcome	**Learning outcomes**	**Reference to the learning outcomes for the field of study**
LO1	describes the techniques of the OOP and gives their examples using selected programming languages	K_W04
LO2	practically applies the OOP techniques in created programs and their fragments	K_U04
LO3	desings the architecture (class diagram) of simple programs from their description	K_U06
LO4	implements simple program from their description and class diagram	K_U04 K_U06

Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	L: examination, Sw: short tests	L, Sw
LO2	L: examination, Sw: evaluations of short programs	L, Sw
LO3	L: examination, Sw: evaluation of the designed structure (class diagram) of a simple program (project)	L, Sw
LO4	Evaluation of a simple project, evaluation of programs realized on Sw	Sw

Student workload (in hours)	**No. of hours**
Calculation	
1 - Attendance at lectures -	30
2 - Attendance at specialization workshop -	30
3 - Preparation for specialization workshop -	30
4 - Participation in student-teacher sessions -	5
6 - Finishing the short programs -	35
7 - Preparation for the exam -	20
TOTAL:	**150**

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	65 (4)+(2)+(1)	2.6
Student workload – practical activities	95 (2)+(3)+(6)	3.8

Basic references	1. Eckel, B.: Thinking in Java, 4th edition. Prentice Hall, 2006 (free book) 2. Danny Poo, Derek Kiong, Swarnalatha Ashok: Object-Oriented Programming and Java. Springer London, 2008. 3. Baesens, Bart ; Backiel, Aimee ; vanden Broucke, Seppe ; Ernest, Michael: Beginning Java Programming: The Object-Oriented Approach. Somerset: John Wiley & Sons, Incorporated, 2015.
Supplementary references	1. Gastón C. Hillar: Learning object-oriented programming. Packt Publishing, 2015. 2. Mackie, Ian ; Craig, Iain D: Object-Oriented Programming Languages: Interpretation. London: Springer London, Limited, 2007.
Organisational unit conducting the course	Software Department — **Date of issuing the programme**
Author of the programme	dr inż. Cezary Bołdak — Feb. 17, 2022

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW – field work,S – seminar