OBJECT ORIENTED PROGRAMMING

Faculty of Computer Science				
Study programme:	**Computer Science**		Degree level:	**Engineer's degree full-time programme**
Specialization	**---**		Diploma path:	**2026/2027W - 2026/2027S**
Module name:	**Object Oriented Programming** (Programowanie obiektowe)			
Module type:	**obligatory**	**Semester: 2**	ECTS:**5**	Module ID:**FCS-00012**
No. of hrs in semester:	Lecture (L) - **30** Classes(C) - **0** Specialization workshop (SW) - **30** Project (P) - **0** Laboratory classes (LC) - **0** Seminar (S) - **0**			
Prerequisites	Programming Basics (FCS-00031),			

Aims and objectives:	Learning the base object-oriented programming techniques and their using in C#. Learning the practical applications of these techniques in simple programs written in C#.		
Forms of teching activities::	lecture, specialization workshop,	Assessment:	Evaluation must be relevant to the intended learning outcomes:
		Lecture: Final test covering the main techniques of the object-oriented programming. Specialization workshop: short programs written in C# by students, presented and explained orally to the teacher	
Module 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 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:	programming, lecture problem, informative lecture, -,		

Learning outcomes

Symbol	Specify min. 4, max. 8 learning outcomes in the following order: knowledge – skills – competence. Each learning outcome must be verifiable	Reference to the programme learning outcomes of education
E1	the techniques of the OOP and gives their examples using selected programming languages	INF1_W04
E2	create classes and objects according to the instructions, using object-oriented programming techniques in practice	INF1_U05
E3	design the program structure according to the principles of object-oriented programming, presenting class components and relationships between classes	INF1_U04
E4	implement and test the designed system in a selected object-oriented programming language, if necessary supplementing the knowledge independently based on technical documentation and source materials	INF1_U13 INF1_U18

No. of learning outcome	Methods of assessing the learning outcome	Type of teaching activities (if more than one) during which the outcome is assessed
E1	exam	L
E2	solving problem tasks	Sw
E3	solving problem tast	Sw
E4	solving problem tasks	Sw

Student's workload (in hours)	**1** - attendance at lectures	None	30
	2 - attendance at specialization workshop	None	30
	3 - preparation for specialization workshop	None	15
	6 - finishing the short programs	None	30
	7 - preparation for the exam	None	20
		TOTAL:	**125**

Quantitative indicators	Student's workload - activities that require direct teacher participation: (2)+(1)	60	**ECTS**
			2.4
	Student's workload connected with practical classes (2)+(3)+(6)	75	3.0

Basic references:

1. A. Bies, Object-oriented programming : for students and programmers, iTSta@rt, 2025
2. Raihan Taher , Hands-On Object-Oriented Programming with C#, Packt Publishing, 2019
3. Jack Purdum, Beginning object-oriented programming with C#, John Wiley & Sons, 2013

Further reading	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.		
Unit:	Software Department	Lecturer/ instructor	dr inż. Anna Łupińska-Dubicka
Date of issuing the programme:	1st March 2024	Author of the programme:	dr inż. Anna Łupińska-Dubicka

L - lecture, C - classes, LC - laboratory classes, P-project, SW - specialization workshop, S - seminar