WSB University							
Field of study: Computer Science							
Module / course: Fundamentals of object-oriented programming							
Educational profile: practical							
Education cycle: I cycle studies							
Number of hours per semester	1		2		3		4
	I	II	III	IV	V	VI	VII
Full time studies (L/C/lab/pr/e)			66				
Part-time studies (L/C/lab/pr/e)			41				
LANGUAGE OF CLASSES	**English**						
LECTURER	Aleksander Dawid prof. of WSB University						
FORM OF CLASSES	**Lecture**						
COURSE OBJECTIVES	Learning advanced object-oriented programming techniques to prepare for software design. Getting to know practical programming of object oriented programming in C# and Java.						

References to course objectives:		**Description of educational results**	**Verification of educational results**
Field of study	**PRK**		
Knowledge			
INF_W04	**P6S_WG**	The student has a structured, theoretically founded knowledge covering the issues of object-oriented programming, creating delegates, handling exceptions and streams.	An exam in the form of an object-oriented software project in C# or Java
Abilities			
INF_U14	**P6S_UW**	The student is able to formulate a specification of simple tasks that can be performed with the methods of object-oriented programming.	Solving real programming problems based on advanced object-oriented programming during laboratory classes.
INF_U01	**P6S_UW**	The student is able to obtain information from various sources about object-oriented structures in programming.	Algorithm complexity analysis
Social competences			
INF_K04	**P6S_KO**	The student helps in solving socio-economic problems using object-oriented software.	Exam and defense of the project.

Students' workload (in didactic hours 1h did.=45 minutes)**

Full- time	**Part-time**
Participation in lectures = 20	Participation in lectures = 4
Participation in classes = 20	Participation in classes = 16
Preparation to classes = 0	Preparation to classes = 0
Preparation to lectures = 1	Preparation to lectures = 1
Preparation to an examination = 6	Preparation to an examination = 6
Project tasks = 25	Project tasks = 21
e-learning = 1	e-learning = 12
Credit/examination = 1	Credit/examination = 1
others (indicate which) = 0	others (indicate which) = 0
TOTAL: 50	**TOTAL: 44**

ECTS points: 2 **Including practical classes: 24**		**ECTS points: 2** **Including practical classes: 20**
PREREQUISITES	Mathematics	
COURSE CONTENT (Division to contact classes and e-learning)	**Online Teams classes:** 1. Virtualization of the programming language (1h) 2. .NET and JRE platform (1h) 3. Generic collections (1h) 4. Evaluation of regular expressions (1h) 5. Containers (Spring framework) (2h) 6. Streams (LINQ, lambda functions) (2h) 7. Indexers, delegates, subscribers (2h) 8. Multithreading support. (1h) 9. Handling events and exceptions. (2h) 10. Java Stream API. (2h) 11. Containers (Spring framework) (1h) Examples of object-oriented programming techniques will be shown in C# and Java Supplementary materials in the form of complete codes representing a given example of the advanced object-oriented programming technique used. Video conferences from the lecture and the laboratory. Tasks for self-completion.	
LITERATURE (compulsory reading)	1. Jennifer Greene, Andrew Stellman, Head First C#, 3rd Edition, O'Reilly Media, 2013 2. B. Stroustrup, C++ language, Helion 2014 3. Wei-Meng Lee, C# 2008. Developer Workshop, Helion 2010 4. Andrew Troelsen, Pro C# 5.0 and the .NET 4.5 Framework, apress, 2012 5. Joseph Albahari, Ben Albahari, C# 5.0 in a Nutshell, 5th Edition, O'Reilly Media, 2012 6. R. Johnson, J. Hoeller, A Arendsen, T. Risberg, C. Sampaleanu, Professional Java Development with the Spring Framework, Wiley Canda 2005 7. Dinesh Rajput, Spring 5 Design Patterns: Master efficient application development with patterns such as proxy, singleton, the template method, and more, Pact publishing 2017.	
OPTIONAL LITERATURE	1. Robert C., Martin, Clean Code: A Handbook of Agile Software Craftsmanship, Prentice Hall, 2008 2. Kingsley-Hughes, K. Kingsley-Hughes, Programowanie od podstaw, Helion 2006 3. Website related to the topic.	
Publications related to the theme of the module	[1] Aleksander Dawid, GPU-based parallel algorithm of interaction induced light scattering simulations in fluids, T*ask Quarterly,* 1(23) (2019) p. 5-17 [2] Aleksander Dawid, PSR-based research of feature extraction from one-second EEG signals: a neural network study, *SN Applied Sciences, 1(12) (2019) p. 1536*	
TEACHING METHODS (Division to contact classes and e-learning)	**Contact classes:** Encouraging the analysis of the lecture material. Independent solving of laboratory problems posed by the lecturer. Implementation of the project **E-learning:** Knowledge test. Programming tasks to be performed	
TEACHING AIDS	Materials provided by the tutor on the e-learning platform. Supplementary literature.	
PROJECT (if implemented in the framework of a classes module)	**Project goal:** To write application software for the .NET platform in C # on the following topics. 1. Computer game 2. 2D graphics program 3. Currency and cryptocurrency exchange	

	Project form: Individual own work (elearning platform)
FORM AND CONDITIONS OF ASSESSMENT	The condition of obtaining a credit is to obtain a positive grade in all forms of credit provided for in the curriculum, taking into account the quantitative criteria of grading specified in the Framework Student Evaluation System at the WSB University.

** L-lecture, C- classes lab- laboratory, pro- project, e- e-learning*