Nazwa zajęć/ Course title:	Inżynieria oprogramowania		ECTS	4
Nazwa zajęć w j. angielskim/ Course title in English:	Software Engineering			
Zajęcia dla kierunku studiów/ Degree program name:	Big Data Analytics			

Język kursu/ Course language:		English			Poziom studiów/ Study level:	
Typ studiów/ Form of studies:	■ stacjonarne	Status zajęć/ Course status	■ podstawowe/ basic	■ obowiązkowe/ mandatory	Semestr/ Semester: I	■ semestr zimowy/ winter semester
	☐ niestacjonarne		☐ kierunkowe/ major	☐ do wyboru/ elective		☐ semestr letni/ summer semester
			Rok akademicki/ Academic year:	2022/2023	Numer katalogowy/ Catalogue number:	ZIM-IE-BDA-2S-01Z-5

Koordynator zajęć/ Course coordinator:	dr Tomasz Świsłocki
Prowadzący zajęcia/ Teachers responsible for the course:	Employees of the Department of Information Systems, Institute of Information Technology, SGGW
Założenia, cele i opis zajęć/ Aims, objectives and description of the course:	The aim of the course is the presentation and practical use of software engineering and its tools. Lecture topics: Lectures cover the presentation of software engineering concepts and dedicated tools. The lectures include methods of IT project management, issues of quality and security, methods and tools supporting software development (CASE), UML diagrams and issues related to software testing and program debugging methodology. Topics of laboratory exercises: Using the knowledge from the lectures to write and test the application, including the negotiation stage. A laboratory group of students work together in class on the implementation of the project. During the laboratory students will learn how to use software engineering tools.
Formy dydaktyczne, liczba godzin/ Teaching forms, number of hours:	a. lecture; number of hours 15; b. laboratory classes; number of hours 30;
Metody dydaktyczne/ Teaching methods:	Lectures, problem analysis, discussion of problems, presentations.
Wymagania formalne i założenia wstępne/ Formal requirements and prerequisites	Object-oriented programming, basics of probability and statistics, C#/Java, SQL.

Efekty uczenia się/ Learning outcomes:		treść efektu przypisanego do zajęć/ the content of the effect assigned to the course:	Odniesienie do efektu kierunkowego/ Relation to the course outcomes	Siła dla ef. kier*/ Impact on the course outcomes*
Wiedza (absolwent zna i rozumie)/ Knowledge: (the graduate knows and understands)	W1	Extended knowledge of algorithms, data bases, software engineering.	W06	1
	W2	Student is able to use software products to solve problems in informatics, science and other scientific fields .		1
	W3	Student is able to use software products to solve problems in informatics, science and other scientific fields . Student is able to use software products to solve problems in informatics, science and other scientific fields . Student is able to use software products to solve problems in informatics, science and other scientific fields . Student is able to use software products to solve problems in informatics, science and other scientific fields . Student is able to use software products to solve problems in informatics, science and other scientific fields .		1
Umiejętności (absolwent potrafi)/ Skills: (the graduate is able to)	U1	Student is able to use software products to solve problems in informatics, science and other scientific fields . Student is able to use software products to solve problems in informatics, science and other scientific fields . Student is able to use software products to solve problems in informatics, science and other scientific fields . Student is able to use software products to solve problems in informatics, science and other scientific fields .	U13	3
				1

	U2	Student is able to use software products to solve problems in informatics, science and other scientific fields .		
		Student is able to use software products to solve problems in informatics, science and other scientific fields .		
		Student is able to use software products to solve problems in informatics, science and other scientific fields .		
		Student is able to use software products to solve problems in informatics, science and other scientific fields .		
Kompetencje (absolwent jest gotów do)/ Competences: (The graduate is ready to)	K1	Student is able to use software products to solve problems in informatics, science and other scientific fields .		1
		Student is able to use software products to solve problems in informatics, science and other scientific fields .		
		Student is able to use software products to solve problems in informatics, science and other scientific fields .		
	K2	Student is able to use software products to solve problems in informatics, science and other scientific fields .		1
		Student is able to use software products to solve problems in informatics, science and other scientific fields .		
		Student is able to use software products to solve problems in informatics, science and other scientific fields .		
		Student is able to use software products to solve problems in informatics, science and other scientific fields .		
Treści programowe zapewniające uzyskanie efektów uczenia się / Program content ensuring the achievement of learning outcomes		Exam - UML, tests, PERT chart, Gantt chart, doxygen. Laboratory – software project realization		
Sposób weryfikacji efektów uczenia się/ Methods of the verification of the learning outcomes:		The software project realization and exam/quiz.		
Szczegóły dotyczące sposobów weryfikacji i form dokumentacji osiąganych efektów uczenia się/ Details on the verification methods and of the ways of documenting the learning outcomes:		The exam/quiz will include knowledge of the CASE tools (e.g. UML, tests, PERT chart, Gantt chart). Project documentation, specification, code and tests.		
Elementy i wagi mające wpływ na ocenę końcową/Elements and weights influencing the final grade:		Exam – 50%, laboratory – 50% of the final grade.		
Miejsce realizacji zajęć/ Teaching place:		Lectures - auditorium, laboratory exercises - computer laboratory		
Literatura/ Literature:		1. Krzysztof Sacha, Software Engineering Techniques: Design for Quality 2. Jan Sommerville – "Software engineering, edition >=8" 3. P. Butcher et al. – "Debug it"		
UWAGI/ ANNOTATIONS				

*) 3 – zaawansowany i szczegółowy, 2 – znaczący, 1 – podstawowy/ 3 – significant and detailed, 2 – considerable, 1 – basic,

Wskaźniki ilościowe charakteryzujące moduł/przedmiot/ Quantitative summary of the course:

Szacunkowa sumaryczna liczba godzin pracy studenta (kontaktowych i pracy własnej) niezbędna dla osiągnięcia zakładanych dla zajęć efektów uczenia się - na tej podstawie należy wypełnić pole ECTS / Estimated number of work hours per student (contact and self-study) essential to achieve the presumed learning outcomes - basis for the calculation of ECTS credits:	**45 h**
Łączna liczba punktów ECTS, którą student uzyskuje na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich lub innych osób prowadzących zajęcia/ Total number of ECTS credits accumulated by the student during contact learning:	**4 ECTS**