



## Subject card

Subject name and code	Database Applications, PG_00047964						
Field of study	Informatics						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2027/2028		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Software Engineering -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Wróbel					
	Teachers	mgr inż. Marcin Kwiatkowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		2.0		18.0	50
Subject objectives	The aim of the course is to familiarize a student with non-relational data models, especially with object-relational and object model. The second part of the course is devoted to selected problems of database servers.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W44] knows and understands, to an advanced extent, architecture, design principles and methods of hardware and software support for local and distributed information systems, including computing systems, databases, computer networks and information applications, as well as the principles of human-computer interaction, the operation and evaluation criteria of data processing, storage and transfer methods, including computational algorithms, artificial intelligence and data mining as well as standards and methods of IT systems administration, monitoring of processes and robustness to undesirable phenomena and activities	The student understands the concept of object-relational mapping and is able to use it in practice	[SW2] Assessment of knowledge contained in presentation
	[K6_U12] is able, to an advanced degree, to analyze the operation of components and systems related to the field of study, and to measure their parameters and study their technical characteristics, as well as to plan and carry out experiments related to the field of study, including measurements and computer simulations, and to interpret the obtained results and draw conclusions	The student is able to implement the system in an object-oriented programming language using a database based on the requirements presented.	[SU1] Assessment of task fulfilment
	[K6_U07] can apply methods of process and function support, specific to the field of study	The student is able to design an object-relational database in order to use it in a simple business process.	[SU2] Assessment of ability to analyse information
	[K6_W03] knows and understands, to an advanced extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum	Student knows how to design object-relational database. Student knows how DBMSs implement concurrency and transactions also in distributed environments.	[SW1] Assessment of factual knowledge
Subject contents	<ol style="list-style-type: none"> <li>1. Development of database-driven systems using frameworks currently available on the market.</li> <li>2. The role and principle of object-relational mapping and its use in practice.</li> <li>3. The role of DAO and DTO in database applications. Separation of database entities from business logic.</li> <li>4. Best practices for database migrations during system development over time.</li> <li>5. Working in groups on your own application using collaborative tools.</li> </ol>		
Prerequisites and co-requisites	Student has knowledge of relational model, and he/she can design simple databases. Student must not be allowed to begin the course without having successfully passed by Bazy Danych and Inżynieria Oprogramowania courses.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Poprawność zadań	50.0%	90.0%
	Kolokwium	50.0%	10.0%
Recommended reading	Basic literature	1. Terry Halpin, Object-Role Modeling Fundamentals: A Practical Guide to Data Modeling with ORM, Technics Publications, UK, 2015	
	Supplementary literature	1.M.Stonebraker, P.Brown. Object-relational DBMSs. Morgan kaufmann Pub., 1999 2.R.G.G.Cattell et al. The Object Data Standard: ODMG 3.0. Morgan Kaufmann Pub., 2000.	
	eResources addresses	Uzupełniająca Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. Design, implement, and test with queries an object-relational database.</li> <li>2. Discuss differences between relational and object-relational data model</li> </ol>		
Work placement	Not applicable		

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