



## Subject card

Subject name and code	Database Applications, PG_00047964						
Field of study	Informatics						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2026/2027		
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	mgr inż. Marcin Kwiatkowski					
	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_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
	[K6_W41] Knows and understands, to an advanced extent, the operation and evaluation criteria of data processing, storage and transfer methods, including computational algorithms, artificial intelligence and data mining	The student knows the issues of data storage and data processing in object-relational and object-oriented systems.	[SW1] Assessment of factual knowledge
	[K6_U42] can apply tools and methods of designing, optimization, monitoring, management, increasing reliability and protection from safety hazards in local and distributed information systems and applications	Student is able to introduce data security mechanisms to a database implementation.	[SU4] Assessment of ability to use methods and tools
	[K6_U06] can analyse the operation of components, circuits and systems related to the field of study, measure their parameters and examine technical specifications	Student is able to compare the expressiveness of relational and object-relational queries.	[SU3] Assessment of ability to use knowledge gained from the subject
Subject contents	1. Object-relational model 2. Collections, objects, and references 3. SQL-99 & SQL 2003 standards - non-relational extensions 4. Object-relational systems 5. Implementation of object-relational model in Oracle - user data types. 6. Implementation of object-relational model in Oracle - operations. 7. Classes and types. 8. Object persistence. 9. Object database schema. 10. Object vs. relational schema. 11. Transactions - definitions & problems. 12. Recovery and ROLLBACK. 13. Cursors and triggers.		
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 Inzynieria Oprogramowania courses.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Poprawność zadań	50.0%	60.0%
	Kolokwium	50.0%	40.0%
Recommended reading	Basic literature	Lecture: 1.Landowska, Kaplanski Database applications. (Lecture notes) Lab: 1.Oracle Documentation Library 10g. Application Developer's Guide - Fundamentals 2.Oracle Documentation Library 10g. PL/SQL User's Guide and Reference 3.Oracle Documentation Library 10g. SQL Reference	
	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	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. Design, implement, and test with queries an object-relational database.  2. Discuss differences between relational and object-relational data model		
Work placement	Not applicable		