Course name:		
Data bases & warehouses		
Field of study: **Computer science**	Type of study: **Full-time**	Sourse code: **CIDM1_05**
Course characteristics: **Mandatory within the additional content**	Level: **Second (M.Sc.)**	Year: **I** Semester: **I**
Type of classes: **lectures, laboratories, exercises**	Hours per week: **2 lect, 2 lab, 1 ex**	ECTS points amount: **5 ECTS**

COURSE GUIDE

AIMS

A1. Gaining knowledge concerning the different models and architecture of databases and warehouses (relational model, object-oriented, postrelational, distributed and semistructural).

A2. Familiar with DBMS tools, environment and optimization techniques

A3. Obtaining knowledge in the area of developing and implementing selected models of databases and warehouses.

A4. Acquisition by students practical skills to work independently and in a team, develop reports, analyze the results, etc.

PREREQUISITES

1. Knowledge of mathematics.
2. Knowledge of databases and SQL fundamentals.
3. Basics of computer skills.
4. Rational and logical thinking.
5. Ability to perform mathematical operations to solve given tasks.
6. Ability to use various sources of information including manuals and technical documentation.
7. Ability to work independently and in a group.
8. Ability to correctly interpret and present their own actions.

LEARNING OUTCOMES

EK 1 – able to use an advanced parts of SQL language

EK 2 – able to develop and implement a given database logical model

EK 3 – able to improve a performance or functionality of given database project

EK 4 – able to use DBMS tools

EK 5 – able to design a database for data warehousing

EK 6 – able to work independently and in a team, develop reports, analyze the results, etc.

CONTENT

Lectures	Hours
Lect. 1 Repetitory course of SQL	**2**

Lect. 2	SQL analytical functions	2
Lect. 3	PL/SQL language	2
Lect. 4	PL/SQL language	2
Lect. 5	PL/SQL language/ dynamic SQL	2
Lect. 6	Object databases	2
Lect. 7	Object databases	2
Lect. 8	Object-oriented parts of SQL language	2
Lect. 9	Spatial databases	2
Lect. 10	XML-enabled database systems	2
Lect. 11	Native XML database systems	2
Lect. 12	SQL Optimization	2
Lect. 13	SQL Injection	2
Lect. 14	Introduction to big data sets, warehousing and data mining.	2
Lect. 15	Contemporary data warehouses	2
Exercises		**Hours**
Ex. 1	Main SQL structures	1
Ex. 2	SQL analytical functions	1
Ex. 3	How to overcome the limitations of SQL using the PL/SQL?	1
Ex. 4	How to overcome the limitations of SQL using the PL/SQL?	1
Ex. 5	How to overcome the limitations of SQL using the PL/SQL?	1
Ex. 6	Limitations of relational model.	1
Ex. 7	Design of object-oriented databases	1
Ex. 8	Design of postrelational databases	1
Ex. 9	Design of spatial databases	1
Ex. 10	Design of semistructural databases	1
Ex. 11	XML-enabled database systems	1
Ex. 12	SQL Optimization	1
Ex. 13	How to protect database systems	1
Ex. 14	Multidimensionality of data	1
Ex. 15	Summary	1
Laboratories		**Hours**
Lab. 1	Repetitory of SQL	2
Lab. 2	SQL analytical functions	2
Lab. 3	PL/SQL language	2
Lab. 4	PL/SQL language	2
Lab. 5	PL/SQL language/ dynamic SQL	2
Lab. 6	Object-oriented parts of SQL language	2
Lab. 7	Object-oriented parts of SQL language	2
Lab. 8	Summary	2
Lab. 9	Spatial databases	2
Lab. 10	XML-enabled database systems	2
Lab. 11	XML-enabled database systems	2
Lab. 12	SQL Optimization	2
Lab. 13	SQL Injection	2
Lab. 14	Warehousing	2
Lab. 15	Summary	2

TEACHING TOOLS

1. – multimedial presentations for lectures
2. – instructions for laboratories

3. – instructions for exercises
4. – workplaces for students equipped with workstations

LITERATURE

1.	1. C. J. Date, Wprowadzenie do systemów baz danych, WNT - W-wa, (seria: Klasyka Informatyki), 2000
2.	2. J. D. Ullman, Systemy baz danych, WNT - W-wa, 1998
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6.	M. McLaughlin, Oracle Database 11g, Programowanie w jezyku PL/SQL, Helion 2009
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8.	Lausen George, Vossen Gottfried - Obiektowe bazy danych. Modele danych i jezyki, WNT, Warszawa, 2000
9.	T. W. Ling, M. L. Lee, G. Dobbie – Semistructured Database Design Springer-Verlag GmbH 2005.
10.	http://www.oracle.com/technology/documentation/index.html
11.	http://www.odbms.org/
12.	http://www.ploug.org.pl/

TEACHER

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