SYLLABUS OF A MODULE

Polish name of a module	**BAZY DANYCH I HURTOWNIE DANYCH**
English name of a module	**DATA BASES & WAREHOUSES**
ISCED classification - Code	0612
ISCED classification - Field of study	*Database and network design and administration*
Languages of instruction	*English*
Level of qualification: ***1 – BSc (EQF 6)*** ***2 – MSc (EQF 7)*** ***3 – PhD (EQF 8)***	*2*
Number of ECTS credit points	*4*
Examination: ***EO – exam oral*** ***EW – exam written*** ***A - assignment***	*EW*
Available in semester: ***S – Spring only*** ***A – autumn only*** ***Y - booth***	*S*

Number of hours per semester:

Lecture	Exercises	Laboratory	Seminar	E-learning	Project
30	0	30	0	0	0

MODULE DESCRIPTION

MODULE OBJECTIVES

O1. Gaining knowledge concerning the different models and architecture of databases (relational model, object-oriented, postrelational, distributed and semistructural) and warehouses.

O2. Familiar with DBMS tools, environment and optimization techniques.

O3. Obtaining knowledge in the area of developing and implementing selected models of databases

O4. Acquisition by students practical skills to work independently and in a team, develop reports, analyze the results, etc.

PRELIMINARY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES

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

LO 1 – Able to use advanced parts of SQL language

LO 2 – Able to develop and implement a given database logical model

LO 3 – Able to improve performance or functionality of a given database project

LO 4 – Able to use DBMS tools

LO 5 – Able to design a database for data warehousing

MODULE CONTENT

Type of classes – lecture	**Number of hours**
Lec 1 - Revision course of SQL - DML	**2**
Lec 2 - Revision course of SQL - DDL	**2**
Lec 3-5 - PL/SQL language	**6**
Lec 6 - PL/SQL language/ dynamic SQL	**2**
Lec 7 - Contemporary database systems	**2**
Lec 8-9 - Object databases	**4**
Lec 10 - Object-oriented parts of SQL language	**2**
Lec 11-12 - Spatial databases	**4**
Lec 13 - Semi-structured databases	**2**
Lec 14 - Introduction to big data sets, warehousing and data mining. Contemporary data warehouses. SQL analytical functions	**2**
Lec 15 – Lecture test	**2**
Sum	**30**
Type of classes– laboratory.	**Number of hours**
Lab 1 - Revision course of SQL - DML	**2**
Lab 2 - Revision course of SQL - DDL	**2**
Lab 3-4 - PL/SQL language	**4**
Lab 5 - PL/SQL language/ dynamic SQL	**2**
Lab 6-8 - Object-oriented parts of SQL language	**6**
Lab 9-10 - Spatial databases	**4**
Lab 11-12 - Semi-structured databases	**4**
Lab 13 - Introduction to big data sets, warehousing and data mining. Contemporary data warehouses	**2**
Lab 14 - SQL analytical functions	**2**
Lab 15 – Test	**2**
Sum	**30**

TEACHING TOOLS

1. - Multimedia presentations for lectures; the course may also be conducted via the PCz e-learning platform.
2. - Instructions for laboratories, the course may also be conducted via the PCz e-learning platform.
3. - Computer laboratory equipped with individual workstations

WAYS OF ASSESSMENT (F – FORMATIVE, S – SUMMATIVE)

F1. - assessment of preparation for laboratory exercises
F2. - assessment of the ability to apply the acquired knowledge while doing the exercises
F3. - evaluation of reports on the implementation of exercises covered by the curriculum
F4. - assessment of activity during classes
S1. - assessment of the ability to solve the problems posed and the manner of presentation obtained results - Test / Oral examination*
S2. - assessment of mastery of the teaching material being the subject of the lecture – final test

*) in order to receive a credit for the module, the student is obliged to attain a passing grade in all laboratory classes as well as in achievement tests.

STUDENT'S WORKLOAD

L.p.	Forms of activity	Average number of hours required for realization of activity
1.	**Contact hours with teacher**	
1.1	Lectures	30
1.2	Tutorials	0
1.3	Laboratory	30
1.4	Seminar	0
1.5	Project	0
1.6	Examination	0
	Total number of contact hours with teacher:	60
2.	**Student's individual work**	
2.1	Preparation for tutorials and tests	10
2.2	Preparation for laboratory exercises, writing reports on laboratories	10
2.3	Preparation of project	0
2.4	Preparation for final lecture assessment	10
2.5	Preparation for examination	0
2.6	Individual study of literature	10
	Total number of hours of student's individual work:	40
	Overall student's workload:	100
Overall number of ECTS credits for the module		4 ECTS
Number of ECTS points that student receives in classes requiring teacher's supervision:		2,4 ECTS
Number of **ECTS** credits acquired during practical classes including laboratory exercises and projects:		1,2 ECTS

BASIC AND SUPPLEMENTARY RESOURCE MATERIALS

1. Date, C. J. (2003). An Introduction to Database Systems, Fifth Edition. AddisonWesley. ISBN 0-201-51381-1
2. Jeffrey Ullman 1997: First course in database systems, Prentice-Hall Inc., Simonand Schuster, Page 1, ISBN 0-13-861337-0
3. Database Systems: The Complete Book (with H. Garcia-Molina and J. Widom),Prentice-Hall, Englewood Cliffs, NJ, 2002
4. Beynon-Davies, P. (2004). Database Systems. 3rd Edition. Palgrave, Houndmills,Basingstoke
5. M. McLaughlin, Oracle Database 11g, PL/SQL Programming, McGraw-Hill Companies, 2008
6. J. Price, Oracle Database 11g SQL, McGraw-Hill, 2008
7. D. Tow, SQL Tunning, O'Reilly 2003
8. Feuerstein, Steven; Bill Pribyl (2005). Oracle PL/SQL Programming (4th ed.).O'Reilly and Associates. ISBN 0-596-00977-1
9. Stonebraker,. Michael with Moore, Dorothy. Object-Relational DBMSs: The NextGreat Wave. Morgan

Kaufmann Publishers, 1996. ISBN 1-55860-397-2.
10. Lausen George, Vossen Gottfried - Models and languages of object-oriented data-bases, Addison-Wesley 1998
11. T. W. Ling, M. L. Lee, G. Dobbie - Semistructured Database Design Springer- VerlagGmbH 2005
12. http://www.oracle.com/technology/documentation/index.html
13. Lazarska M., Siedlecka-Lamch O., Comparative study of relational and graph databases, in Proc. IEEE 15th International Scientific Conference on Informatics, IEEE, 234-241, 2019
14. M. Jarke, M. Lenzerini., Y. Vassiliou, P. Vassiliadis, Fundamentals of Data Warehouses, Springer-Verlag, Berlin, 2003

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