MODULE DESCRIPTION

Module code	full-time studies:	**Z-ZIP1-E-521**
	part-time studies:	**Z-ZIPN1-E-521**
Module name	**Relational Databases Design**	
Module name in Polish	**Projektowanie relacyjnych baz danych**	
Valid from academic year	**2019/2020**	

MODULE PLACEMENT IN THE SYLLABUS

Field of study	**MANAGEMENT AND PRODUCTION ENGINEERING**
Level of education	**1st degree**
Studies profile	**General**
Form and method of conducting classes	**Full-time and Part-time**
Specialisation	**Computer Science for Management and Modelling**
Unit conducting the module	**Department of Computer Science Technologies**
Module co-ordinator	**Marcin Detka, PhD**
Approved by:	**Dariusz Bojczuk, PhD, DSc**

MODULE OVERVIEW

Type of subject / group of subjects	**Specialist subject**
Module status	**Compulsory**
Language of conducting classes	**English**
Module placement in the syllabus - semester	**Semesetr V**
Initial requirements	**Information Technologies** **Fundamentals of Computer Science** **Databases**
Examination (YES/NO)	**YES**
Number of ECTS credit points	**3**

Method of conducting classes		**Lecture**	**Classes**	**Laborato-ry**	**Project**	**Other**
Per semester	full-time studies:	**15**		**15**		
	part-time studies:	**9**		**9**		

TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Category	Symbol	Learning outcomes	Assignations to the directional learning outcomes
Knowledge	W01	A student has knowledge of the database design and normalization process.	ZIP1_U04 ZIP1_W12
	W02	The student understands and knows the principle of graphic presentation a database model	ZIP1_U04 ZIP1_W12
	W03	The student has a basic knowledge of the SQL language syntax.	ZIP1_U04 ZIP1_W12
Skills	U01	A student is able to present a model of databases with ERD.	ZIP1_U07 ZIP1_U14
	U02	A student is able to use orders of the SQL language in a selected system of managing databases.	ZIP1_U07 ZIP1_U14
Social competences	K01	A student is ready to improve and master the acquired knowledge and skills as regards designing databases.	ZIP1_K01

TEACHING CONTENTS

Method of conducting classes	Teaching contents
Lecture	Relational data model. Attributes, keys and relationships between tables. Database normalization. Levels of analysis when designing relational databases. Conceptual, logical and physical models. Reverse engineering. Data modeling practices. Designing entity relationship diagrams. Consistency conditions and default values. Model application in the form of SQL scripts for creating database tables using DBMS MySQL. Basics of SQL language: - (DDL): - defining relational database structures. - (DML) - adding, modifying and deleting data. - (DQL) - selection, projection, data sorting operations. - selecting data from multiple tables. Column and grouping functions. Computed columns. - Saving queries as views. The use of subqueries. Introduction to the management of MySQL DBMS - security of access to data, access rights, roles, users.
Laboratory	Development of a relational database project. Modelling through different levels of requirements and assumptions analysis. Graphical presentation of the database model. Database standardization. Supports the management of MySQL DBMS. Creating a designer (programmer) environment for relational databases Generating SQL scripts for creating database tables. Attribute restrictions. Structured query language (SQL) - filling database tables. Structured query language (SQL) - selecting and ordering data, displaying information from multiple tables. Structured query language (SQL) - column and grouping functions. Structured query language (SQL) - adding, modifying and deleting data and creating views Database security - creating a permission plan.

METODS OF ASSESSING TEACHING RESULTS

Symbol	Methods of checking the learning outcomes *(select X)*					
	Oral exam	**Written exam**	**Test**	**Project**	**Statement**	**Other**
W01		X	X		X	
W02		X	X		X	
W03		X	X		X	
U01		X	X		X	
U02		X	X		X	
K01		X	X		X	

FORM AND CONDITIONS OF PASSING

Form of classes	Form of credit	Passing conditions
Lecture	Exam	Obtaining 50% of points from a written final thesis, the scope of which applies to both lectures and laboratories.
Laboratory	Credit with grade	The student scores points for activity in laboratories, for the preparation of reports to selected laboratories (according to the instructor's indications) and for two practical tests at computers. The condition for passing is 50% of the points.

STUDENT WORKLOAD

<table>
<tr><th colspan="13">Balance of ECTS points</th></tr>
<tr><td rowspan="3">No.</td><td rowspan="3">Type of student's activity</td><td colspan="10">Student's workload</td><td rowspan="3">Unit</td></tr>
<tr><td colspan="5">full-time</td><td colspan="5">part-time</td></tr>
<tr><td>Lc</td><td>C</td><td>Lb</td><td>P</td><td>O</td><td>Lc</td><td>C</td><td>Lb</td><td>P</td><td>O</td></tr>
<tr><td>1.</td><td>Participation in the activities</td><td>15</td><td></td><td>15</td><td></td><td></td><td>9</td><td></td><td>9</td><td></td><td></td><td>h</td></tr>
<tr><td>2.</td><td>Other (consultation, exam)</td><td>2</td><td></td><td>2</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td></td><td>h</td></tr>
<tr><td>3.</td><td>Number of hours of a student's assisted work</td><td colspan="5">34</td><td colspan="5">22</td><td>h</td></tr>
<tr><td>4.</td><td>Number of ECTS credit points which are allocated for assisted work</td><td colspan="5">1,4</td><td colspan="5">0,9</td><td>ECTS</td></tr>
<tr><td>5.</td><td>Number of hours of a student's unassisted work</td><td colspan="5">41</td><td colspan="5">53</td><td>h</td></tr>
<tr><td>6.</td><td>Number of ECTS credit points which a student receives for unassisted work</td><td colspan="5">1,6</td><td colspan="5">2,1</td><td>ECTS</td></tr>
<tr><td>7.</td><td>Work input connected with practical classes</td><td colspan="5">38</td><td colspan="5">38</td><td>h</td></tr>
<tr><td>8.</td><td>Number of ECTS credit points which a student receives for practical classes</td><td colspan="5">1,5</td><td colspan="5">1,5</td><td>ECTS</td></tr>
<tr><td>9.</td><td>Total number of hours of a student's work</td><td colspan="5">75</td><td colspan="5">75</td><td>h</td></tr>
<tr><td>10.</td><td>Punkty ECTS za moduł
1 ECTS=25 hours</td><td colspan="10">3</td><td>ECTS</td></tr>
</table>

LITERATURE

1. Sharon A., Terry E. (2005), *Beginning Relational Data Modeling*, 2nd Edition, Apress.
2. Garcia-Molina H.,, Ullman J., Widom J. (2002), *Database Systems: The Complete Book,* 2nd Edition, Pearson (https://people.inf.elte.hu/miiqaai/elektroModulatorDva.pdf).
3. Molinaro A., de Graaf R. (2020), *SQL Cookbook: Query Solutions and Techniques for All SQL Users*, 2nd edition, O'Reilly Media, Inc.