



### MODULE DESCRIPTION

Module code	full-time studies:	<b>Z-ZIP1-E-409</b>
	part-time studies:	<b>Z-ZIPN1-E-409</b>
Module name	<b>Databases</b>	
Module name in Polish	<b>Bazy danych</b>	
Valid from academic year	<b>2023/2024</b>	

### MODULE PLACEMENT IN THE SYLLABUS

Field of study	<b>MANAGEMENT AND PRODUCTION ENGINEERING</b>
Level of education	<b>1st degree</b>
Studies profile	<b>General</b>
Form and method of conducting classes	<b>Full-time and Part-time</b>
Specialisation	<b>All</b>
Unit conducting the module	<b>Department of Computer Science Technologies</b>
Module co-ordinator	<b>Marzena Nowakowska, PhD, DSc</b>
Approved by:	<b>Dariusz Bojczuk, PhD, DSc</b>

### MODULE OVERVIEW

Type of subject / group of subjects	<b>Major</b>
Module status	<b>Compulsory</b>
Language of conducting classes	<b>English</b>
Module placement in the syllabus - semester	<b>Semester IV</b>
Initial requirements	<b>Fundamentals of Computer Science ComputerScience-(VisualBasic/Android) Programming</b>
Examination (YES/NO)	<b>NO</b>
Number of ECTS credit points	<b>3</b>

Method of conducting classes		Lecture	Classes	Laboratory	Project	Other
Per semester	full-time studies:	<b>15</b>		<b>24</b>		
	part-time studies:	<b>9</b>		<b>14</b>		

## TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Category	Symbol	Learning outcomes	Assignations to the directional learning outcomes
Knowledge	W01	A student knows and understands database universality and the benefits of applying them.	ZIP1_W05
	W02	A student has basic knowledge as regards relational database model including data structures of this model, model operation, integrational constraints, and the standardisation process of a logic schema.	ZIP1_W05
Skills	U01	A student is able to design his/her own relational database, built from several connected tables; a student is also able to conduct the standardisation process.	ZIP1_U07
	U02	A student is able to manage a created database and effectively use a query language.	ZIP1_U07
	U03	A student has the ability of presenting information obtained from a database in a understandable for an external user.	ZIP1_U07
Social competences	K01	A student understands the necessity of continuous improvement of his/her knowledge as regards databases.	ZIP1_K01
	K02	A student is ready to work individually and in a team (by accepting various roles in it).	ZIP1_K04

## TEACHING CONTENTS

Method of conducting classes	Teaching contents
Lecture	<p>Introduction to the database theory. Basic concepts of databases. The requirements for databases. Relational database model. Database management systems (DBMS). Anomalies in table designs. Normalization process; 1NF, 2NF, 3NF. Fundamentals of database design. MS Access DBMS environment. Creating a database in MS Access. Fields and data types, field properties, relationships window.</p> <p>Basic operations on tables. Filtering and sorting data. Designing queries. Select queries (detailed, summary, including, cross join (crosstab) queries), action queries. Parameters in queries.</p> <p>Designing forms. Form types. Form sections. Types of controls. Changing form properties and components of a form. Split (master-detail) forms.</p> <p>Designing reports. Report types. Report sections. Data sorting and grouping.</p> <p>Macro design environment. Actions and action parameters in macros. Control elements in macros. Event handling with macros.</p> <p>Using macros in forms and reports. Application control forms.</p>
Laboratory	<p>Database design. Creating tables in MS Access DBD (structure, entering data, index tags). Primary key and foreign key of a table. Relationships between tables. Basic operations on tables; filtering and sorting data.</p> <p>Query design. Query design environment. Basic operations in queries: projection, sorting, filtering. Expression builder. Calculated fields. Parametric queries.</p> <p>Aggregating statements. Summary queries. Statistical summaries in grouping and cross join queries. Filtering data in summary queries.</p> <p>Action queries: make table query, append query, field update query, record deletion query.</p> <p>Form design. Form design environment - form sections. Types of controls. Properties of a form and components of a form. Split (master-detail) forms.</p> <p>Report design. Sections of reports. Sorting and grouping of data. Summaries.</p> <p>Data organization in simple reports; calculated fields, sorting and filtering information.</p> <p>Macros - design environment, actions and action parameters. Control elements in macros. Using macros in forms and reports. Event handling with macros.</p>

## METHODS OF ASSESSING TEACHING RESULTS

Symbol	Methods of checking the learning outcomes <i>(select X)</i>					
	Oral exam	Written exam	Test	Project	Statement	Other
W_01			X			
W_02			X			
U_01			X			
U_02			X			
U_03			X			
K_01						X
K_02						X

## FORM AND CONDITIONS OF PASSING

Form of classes	Form of credit	Passing conditions
Lecture	Credit with grade	Obtaining at least 50% of the points in the final test. The student may be prescribed a laboratory grade in the case of grades: 4.5 and 5.
Laboratory	Credit with grade	Obtaining at least 50% of the points from the colloquia during the classes.

## STUDENT WORKLOAD

Balance of ECTS points												
No.	Type of student's activity	Student's workload										Unit
		full-time					part-time					
		Lc	C	Lb	P	O	Lc	C	Lb	P	O	
1.	Participation in the activities	15		24			9		15			h
2.	Other (consultation, exam)	2		2			2		2			h
3.	<b>Number of hours of a student's as- sisted work</b>	<b>43</b>					<b>28</b>					h
4.	<b>Number of ECTS credit points which are allocated for assisted work</b>	<b>1,7</b>					<b>1,1</b>					ECTS
5.	<b>Number of hours of a student's un- assisted work</b>	<b>32</b>					<b>47</b>					h
6.	<b>Number of ECTS credit points which a student receives for unassisted work</b>	<b>1,3</b>					<b>1,9</b>					ECTS
7.	<b>Work input connected with practical classes</b>	<b>46</b>					<b>47</b>					h
8.	<b>Number of ECTS credit points which a student receives for practical classes</b>	<b>1,8</b>					<b>1,9</b>					ECTS
9.	<b>Total number of hours of a stu- dent's work</b>	<b>75</b>					<b>75</b>					h
10.	<b>Punkty ECTS za modul</b> <i>1 ECTS=25 hours</i>	<b>3</b>										ECTS

## LITERATURE

1. Churcher C. (2012), *Beginning Database Design: From Novice to Professional*, Apress.
2. Hernandez M. J. (2020), *Database design for Mere Mortals: A Hands-On Guide to Relational Database Design*, Addison Wesley Pub Co Inc.
3. Kroenke D. (2011), *Database concepts*, Upper Saddle River: Pearson.
4. Rod S. (2008), *Database Design Solutions*, Wiley Publishing Inc.
5. A wide variety of resources can be found on the Internet, key phrases: databases, relational databases.