



### COURSE DESCRIPTION

Course code	full-time studies	
	part-time-studies	
Course name	<b>Bazy danych</b>	
Course name in English	<b>Databases</b>	
Valid from academic year	<b>2023/24</b>	

### PLACEMENT IN THE TEACHING PROGRAM

Field of study	Computer Science
Level of education	1st degree
Studies profile	General
Form and method of teaching classes	<b>Full-time and part-time studies</b>
Specialization	<b>All specializations</b>
Organizational unit responsible for the course	<b>Department of Computer Systems</b>
Course coordinator	<b>Dr inż. Mariusz Bedla</b>
Approved by	<b>Dean of the Faculty of Electrical Engineering, Automatic Control and Computer Science Roman Deniziak, KUT prof., DSc, PhD</b>

### GENERAL CHARACTERISTIC OF THE COURSE

Course affiliation	<b>Major subject</b>	
Course status	<b>Obligatory</b>	
Language	<b>English</b>	
Semester	full-time studies	<b>III</b>
	part-time-studies	<b>III</b>
Requirements	<b>Fundamentals of Programming 1</b>	
Exam (YES/NO)	<b>NO</b>	
ECTS	<b>4</b>	

Course form		lecture	classes	laboratory	project	other
Hours per semester	full-time studies	<b>30</b>	<b>0</b>	<b>30</b>	<b>0</b>	<b>0</b>
	part-time-studies	<b>18</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>0</b>

## LEARNING RESULTS

Category	Result Symbol	Learning Results	References to the field of study results
Knowledge	W01	Student knows and understands relational databases operating principles.	INF1_W12
	W02	Student knows and understands principles of relational database design.	INF1_W12
	W03	Student knows and understands database query language statements and its procedural extension.	INF1_W12
Skills	U01	Student can design relational databases.	INF1_U12
	U02	Student can program using database query language and its procedural extension.	INF1_U12
Social competence	K01	Student is ready to use his knowledge in professional life.	INF1_K01, INF1_K02

## COURSE CONTENT

Course Form	Content
lecture	<ul style="list-style-type: none"> <li>• Introduction, relational databases operating principles</li> <li>• Conceptual database design</li> <li>• Logical database design for the relational model</li> <li>• Translation of the logical data model for the target database management system</li> <li>• Basic statements of database query language</li> <li>• Queries, views</li> <li>• Basic statements of procedural extension to database query language</li> <li>• Functions, procedures, triggers</li> <li>• Development of a client application for a relational database</li> </ul>
laboratory	<ul style="list-style-type: none"> <li>• Introduction, familiarization with the database software</li> <li>• Conceptual database design</li> <li>• Logical database design for the relational model</li> <li>• Translation of the logical data model for the target database management system</li> <li>• Basic statements of database query language</li> <li>• Queries, views</li> <li>• Basic statements of procedural extension to database query language</li> <li>• Functions, procedures, triggers</li> <li>• Development of a client application for a relational database</li> </ul>

## LEARNING RESULTS VERIFICATION METHODS

Result Symbol	Learning results verification methods					
	Oral Exam	Written Exam	Midterm	Project	Report	Other
W01		X				
W02		X				
W03		X				
U01			X			X
U02			X			X

K01						X
-----	--	--	--	--	--	---

### ASSESSMENT FORMS AND CRITERIA

Course Form	Assessment Form	Assessment Criteria
lecture	Positive evaluation	The student should obtain at least 50% of points at the final test.
laboratory	Positive evaluation	The student should obtain at least 50% points from laboratory tasks and tests.

### STUDENT'S VOLUME OF WORK

ECTS Balance												
No.	Activity Type	Student Involvement										Unit
		full-time studies					part-time-studies					
		Lec	C	Lab	P	S	Lec	C	Lab	P	S	
1.	Participation in classes according to the schedule	30	0	30	0	0	18	0	18	0	0	h
2.	Other (consultations, exams)	2	0	2	0	0	2	0	2	0	0	h
3.	<b>Total with the direct assist of an academic teacher</b>	<b>64</b>					<b>40</b>					h
4.	<b>Number of ECTS, that students obtains with the direct assist of an academic teacher</b>	<b>2.56</b>					<b>1.6</b>					ECTS
5.	<b>Hours of unassisted student work</b>	<b>36</b>					<b>60</b>					h
6.	<b>Number of ECTS that student obtains working unassisted</b>	<b>1.44</b>					<b>2.4</b>					ECTS
7.	<b>Practical classes volume of work</b>	<b>30</b>					<b>18</b>					h
8.	<b>Number of ECTS obtained by student at practical classes</b>	<b>1.2</b>					<b>0.72</b>					ECTS
9.	<b>Total student's volume of work expressed in hours</b>	<b>100</b>					<b>100</b>					h
10.	<b>ECTS</b>	<b>4</b>										ECTS

### BIBLIOGRAPHY

1. Connolly T., Begg C.: Database Systems: A Practical Approach to Design, Implementation, and Management, Global Edition, Pearson, 2014
2. Garcia-Molina H., Ullman JD., Widom J.: Database Systems: The Complete Book, 2nd Edition, Pearson, 2008
3. Elmasri R., Navathe S.: Fundamentals of Database Systems 7th Edition, Pearson, 2015
4. Allen S.: Data Modeling for Everyone, Curlingstones, 2003
5. Price J.: Oracle Database 12c SQL, McGraw-Hill Education, 2013
6. McLaughlin M.: Oracle Database 12c PL/SQL Programming, McGraw-Hill Education, 2014
7. Bryla B., Loney K.: Oracle Database 11g DBA Handbook, McGraw-Hill Education, 2007
8. Karwin B.: SQL Antipatterns: Avoiding the Pitfalls of Database Programming, Pragmatic Programmers, 2017
9. Sadalage P.J., Fowler M.: NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence, Addison-Wesley Professional, 2012

10. Dan Sullivan, NoSQL for Mere Mortals, Addison-Wesley Professional, 2015
11. Guy Harrison, Next Generation Databases: NoSQL and Big Data, Apress, 2015
12. Michael J. Hernandez, Database Design for Mere Mortals: 25th Anniversary Edition 4th Edition, Addison-Wesley Professional, 2020,
13. John Viescas, SQL Queries for Mere Mortals: A Hands-On Guide to Data Manipulation in SQL 4th Edition, Addison-Wesley Professional, 2018
14. Robin Dewson, Beginning SQL Server for Developers 4th Edition, Apress, 2015
15. Miguel Cebollero, Michael Coles, Jay Natarajan, Pro T-SQL Programmer's Guide 4th ed. Edition, Apress, 2016
16. Vinicius M. Grippa, Sergey Kuzmichev, Learning MySQL: Get a Handle on Your Data 2nd Edition, O'Reilly Media, 2021
17. Lynn Beighley, Head First SQL: Your Brain on SQL - A Learner's Guide, Helion, 2007
18. Richard Stones, Neil Matthew, Beginning Databases with PostgreSQL: From Novice to Professional (Beginning From Novice to Professional) 2nd Edition, Apress, 2002