



# POLYTECHNIC OF MEĐIMURJE IN ČAKOVEC

## COURSE SYLLABUS

ACADEMIC YEAR: 2020/2021

### 1. GENERAL COURSE INFORMATION

<b>1.1 Course name</b>	<b>Databases II</b>			
<b>1.2 Study program/s</b>	<b>Undergraduate professional study of Computer Science</b>			
<b>1.3 Course status (M,E)</b>	<b>Electoral</b>	<b>1.6 Mode of instruction (number of hours)</b>	<b>Lectures</b>	30
<b>1.4 Course code</b>			<b>Exercises</b>	30
<b>1.5 Course abbreviation</b>	PB2		<b>Seminars</b>	
<b>1.6 Semester</b>	V		<b>E-learning</b>	
<b>1.7 ECTS</b>	4	<b>1.7 Place and time of instruction</b>	Premises of the Polytechnic of Međimurje in Čakovec, according to the schedule published on the website	

### 2. TEACHING STAFF

<b>2.1 Course leader/s-title</b>	Željko Knok/ Master of Science	<b>contact</b>	zknok@mev.hr
		<b>contact</b>	
<b>2.2 Assistant/s- title</b>		<b>contact</b>	
		<b>contact</b>	
<b>2.3 Instruction held by- title</b>		<b>contact</b>	

### 3. COURSE DESCRIPTION

<b>3.1 Course goals</b>	After completing the course, the student will be able to implement a database in the information system. Acquires knowledge in the field of object management and data access control based on the MySQL database									
<b>3.2 Prerequisites</b>	To take the course, it is necessary to pass the course Databases I									
<b>3.3 Course outcomes</b>	After successfully completing the course, students will be able to: O1 - Solve difficulties in database operation through models and structures O2 - Create stored tasks (functions, procedures, triggers) O3 - Use permissions and data lock O4 - Evaluate different types of data storage and control									
<b>3.4 Course content</b>	The course presents contents related to working with the database through objects, stored tasks, permissions and access controls. In the practical part, open source tools are used.									
<b>3.5 Types of coursework</b>	x	Lectures	x	Exercises		Blended e-learning	x	Individual activities		Laboratory
		Seminars and workshops		Distant learning		Field classes	x	Multimedia and network		Mentorship
		Other								
<b>3.6 Language of instruction</b>	Croatian /English									
<b>3.7 Monitoring students' work (enter the number of ECTS credits for each activity so that the</b>	1,00	Class attendance				Seminars			Essay	
	1,00	Class activity				Project			Report/paper	
	1,00	Midterm exams			1,00	Practical task			Continuous knowledge check	
		Written exam				Experimental work				

<p><b>total number of ECTS credits is equal to the total ECTS value of the course, 1 ECTS = 30 hours)</b></p>	<p>Oral exam</p>	<p>Research</p>																																																									
<p><b>3.8 Assessment and evaluation of students' work during classes and at the final exam</b></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Activity specification</th> <th style="width: 20%;">Percent %</th> <th style="width: 20%;">Points</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;">Assessment during instruction</td> </tr> <tr> <td>Attendance</td> <td style="text-align: center;">5%</td> <td style="text-align: center;">5</td> </tr> <tr> <td>Class activity</td> <td style="text-align: center;">5%</td> <td style="text-align: center;">5</td> </tr> <tr> <td>Seminar/ project/ essay</td> <td style="text-align: center;">30%</td> <td style="text-align: center;">30</td> </tr> <tr> <td>Midterm exam 1</td> <td style="text-align: center;">30%</td> <td style="text-align: center;">30</td> </tr> <tr> <td>Midterm exam 2</td> <td style="text-align: center;">30%</td> <td style="text-align: center;">30</td> </tr> <tr> <td colspan="3" style="text-align: center;"><i>Exam assessment for the students who failed to fulfil all the obligatory requirements during the semester</i></td> </tr> <tr> <td>Written exam</td> <td style="text-align: center;">60%</td> <td style="text-align: center;">60</td> </tr> <tr> <td><b>Total:</b></td> <td style="text-align: center;"><b>100%</b></td> <td style="text-align: center;"><b>100</b></td> </tr> </tbody> </table>			Activity specification	Percent %	Points	Assessment during instruction			Attendance	5%	5	Class activity	5%	5	Seminar/ project/ essay	30%	30	Midterm exam 1	30%	30	Midterm exam 2	30%	30	<i>Exam assessment for the students who failed to fulfil all the obligatory requirements during the semester</i>			Written exam	60%	60	<b>Total:</b>	<b>100%</b>	<b>100</b>																										
Activity specification	Percent %	Points																																																									
Assessment during instruction																																																											
Attendance	5%	5																																																									
Class activity	5%	5																																																									
Seminar/ project/ essay	30%	30																																																									
Midterm exam 1	30%	30																																																									
Midterm exam 2	30%	30																																																									
<i>Exam assessment for the students who failed to fulfil all the obligatory requirements during the semester</i>																																																											
Written exam	60%	60																																																									
<b>Total:</b>	<b>100%</b>	<b>100</b>																																																									
<p><b>3.9 Assessment criteria – analysis per learning outcomes</b></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="7" style="text-align: center;">Ways of evaluating learning outcomes</th> </tr> <tr> <th></th> <th style="text-align: center;">Attendance</th> <th style="text-align: center;">Activity</th> <th style="text-align: center;">Mid-term exam 1</th> <th style="text-align: center;">Mid-term exam 2</th> <th style="text-align: center;">Practical work</th> <th style="text-align: center;">Total</th> </tr> </thead> <tbody> <tr> <td>Outcome 1</td> <td></td> <td></td> <td style="text-align: center;">15</td> <td></td> <td style="text-align: center;">10</td> <td style="text-align: center;">25</td> </tr> <tr> <td>Outcome 2</td> <td></td> <td></td> <td style="text-align: center;">15</td> <td></td> <td style="text-align: center;">5</td> <td style="text-align: center;">20</td> </tr> <tr> <td>Outcome 3</td> <td></td> <td></td> <td></td> <td style="text-align: center;">15</td> <td style="text-align: center;">5</td> <td style="text-align: center;">20</td> </tr> <tr> <td>Outcome 4</td> <td></td> <td></td> <td></td> <td style="text-align: center;">15</td> <td style="text-align: center;">10</td> <td style="text-align: center;">25</td> </tr> <tr> <td>Outcome not-related</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center;">10</td> </tr> <tr> <td><b>Total</b></td> <td style="text-align: center;">5</td> <td style="text-align: center;">5</td> <td style="text-align: center;">30</td> <td style="text-align: center;">30</td> <td style="text-align: center;">30</td> <td style="text-align: center;">100</td> </tr> </tbody> </table> <p>Grading of outcomes (in order to pass the mid-term exam/exam the student must achieve at least 50% points for each learning outcome)</p> <p>Points      Grade</p> <p>89 – 100    excellent (5)</p> <p>76 – 88     very good (4)</p> <p>63 – 75     good (3)</p> <p>50 – 62     pass (2)</p> <p>0 – 49      fail (1)</p>			Ways of evaluating learning outcomes								Attendance	Activity	Mid-term exam 1	Mid-term exam 2	Practical work	Total	Outcome 1			15		10	25	Outcome 2			15		5	20	Outcome 3				15	5	20	Outcome 4				15	10	25	Outcome not-related						10	<b>Total</b>	5	5	30	30	30	100
Ways of evaluating learning outcomes																																																											
	Attendance	Activity	Mid-term exam 1	Mid-term exam 2	Practical work	Total																																																					
Outcome 1			15		10	25																																																					
Outcome 2			15		5	20																																																					
Outcome 3				15	5	20																																																					
Outcome 4				15	10	25																																																					
Outcome not-related						10																																																					
<b>Total</b>	5	5	30	30	30	100																																																					
<p><b>3.10 Specific features related with taking the course</b></p>	<p>If a student collects 50% of the points of each outcome, he / she directly takes the exam, provided that he / she has done practical work (exercises). A student cannot access the exam period if he / she has not achieved min. 60% correct answers. Practical work-exercises are made according to the instructions published on the Merlin system and are submitted by posting on the Merlin. Checking the completed exercises is done in the exercise classes after prior preparation with the teacher. During the semester, the student is required to perform five exercises independently. Practical work (completed exercises) is taught until the last week of lectures. During the exam, it is possible to orally check the knowledge from practical work (exercises).</p> <p>If a student does not achieve a sufficient number of points on the midterm exam, he / she cannot take the next midterm exam.</p> <p>Once achieved points in intermediate exams for each learning outcome are no longer deleted unless the student decides to correct the result for each learning outcome, whereby the points won until then are deleted and newly achieved points for that learning outcome are entered.</p> <p>The final grade is obtained on the exam period and is the sum of points earned during classes.</p>																																																										

	Students who did not take the colloquium access the written part of the exam where all learning outcomes are checked, and are required to have completed exercises before taking the exam.	
<b>3.11 Students obligations</b>	<p>Full-time students are required to attend at least 70% of the total number of hours of lectures and exercises in order to exercise the right to take the exam. Part-time students are required to attend at least 30% of the total number of hours of lectures and exercises in order to exercise the right to take the exam. If the student has not fulfilled all the obligations set by the course, he is obliged to attend the lectures again and meet the conditions for taking the exam.</p> <p>Attendance can be offset by online tuition, organised webinars and added assignments given by teachers. One lesson lasts 45 minutes, and several hours form a teaching unit. Absence from one teaching unit is counted as one absence. Delays and apologies are recorded separately. In that case, if the student missed more than 50% of classes, and has a justifiable reason/apology, the request should be submitted to the Department Council, which then decides on the justification of student absences with the obligatory opinion of the course leader.</p>	
<b>3.12 Written assignments</b>		
<b>3.13 Required reading</b>	1.	Manger, R: Baze podataka, skripta, Sveučilište u Zagrebu, Prirodoslovni fakultet, drugo izdanje, Zagreb,2014.
	2.	
<b>3.14 Additional reading</b>	1.	Lecture presentations
	2.	
<b>4 ADDITIONAL COURSE INFORMATION</b>		
<b>4.1 Quality control</b>	The quality of the program, teaching process, teaching skills and level of mastery of the material will be established by conducting a written evaluation based on questionnaires, and in other standardised ways and in accordance with the by-laws of the Polytechnic of Međimurje in Čakovec.	
<b>4.2 Contact the teacher</b>	Students can contact the teacher during the office hours and during classes, while for short questions and explanations they can contact him/her any day during working hours by coming in person or by landline. It is also possible to ask questions by e-mail, which will be answered in 48 hours at the latest. It is desirable for students to come as often as possible for any possible questions during the teacher's office hours.	
<b>4.3 Information about the course</b>	It is the obligation of each student to be regularly informed about the course. All notifications about the classes or possible postponement of classes will be posted on the bulletin board and on the website of the Polytechnic at least 24 hours in advance.	
<b>4.4 Course contribution to the study program</b>	Apply the acquired learning skills, basic knowledge of the profession and problem solving necessary for continuing studies at a higher level. Use Cloud computing as a concept to access data and applications.	

**5. ANALYSIS OF COURSE TOPICS (the number of hours is equal to the number of lectures and exercises of the course)**

<b>LECTURES</b>				
<b>Week</b>	<b>Topic and description</b>	<b>Method</b>	<b>Learning outcomes</b>	<b>Course outcome</b>
		<ul style="list-style-type: none"> <li>• Direct teaching (lecture, instruction, pp presentation)</li> <li>• Discovery learning (individual, lead, discussion)</li> <li>• Group learning</li> <li>• Case study</li> <li>• Field classes...</li> </ul>		
1.	Introduction to course content, types of client-server architecture	Direct teaching (lecture, instruction, pp presentation)	Distinguish client-server architectures	O1
2.	DDL, DML, built-in functions, Cartesian / JOIN	Direct teaching (lecture, instruction, pp presentation)	Use built-in functions	O1
3.	Aliases, supports, indexes	Direct teaching (lecture, instruction, pp presentation)	Distinguish commands for working with databases	O1
4.	Centralized and distributed databases	Direct teaching (lecture, instruction, pp presentation)	Use different types of databases	O1
5.	Procedures and functions	Direct teaching (lecture, instruction, pp presentation)	Distinguish the types of stored tasks	O2
6.	Cursor	Direct teaching (lecture, instruction, pp presentation)	Use cursors to control the flow	O2
7.	Current control	Direct teaching (lecture, instruction, pp presentation)	Use different flow control tools	O2
8.	Mid-term exam 1			O1-O2
9.	Triggers	Direct teaching (lecture, instruction, pp presentation)	Apply basic syntax to triggers	O3
10.	Data lock	Direct teaching (lecture, instruction, pp presentation)	Apply and differentiate basic data locking tools	O3
11.	Allocation of permits	Direct teaching (lecture, instruction, pp presentation)	Explain the types of permits	O3
12.	Connectivity	Direct teaching (lecture, instruction, pp presentation)	Explain the concept of connectivity	O4
13.	Data warehouse	Direct teaching (lecture, instruction, pp presentation)	Explain the process of creating a data warehouse	O4

14.	The difference between a transaction system and a data warehouse	Direct teaching (lecture, instruction, pp presentation)	Explain the transaction system in relation to data warehouses	O4
15.	Mid-term exam 2			O3-O4
<b>EXERCISES/ SEMINARS</b>				
<b>Week</b>	<b>Topic and description</b>	<b>Method</b> <ul style="list-style-type: none"> <li>• Direct teaching (lecture, instruction, pp presentation)</li> <li>• Discovery learning (individual, lead, discussion)</li> <li>• Group learning</li> <li>• Case study</li> <li>• Field classes...</li> </ul>	<b>Learning outcomes</b>	<b>Course outcome</b>
1.	Base model to be used in the exercises, DBI repetition	Direct teaching (lecture, instruction, pp presentation)	Explain the model building process	O1
2.	Command types (DDL, DML)	Guided task, code examples	Apply basic types of commands when creating queries	O1
3.	The concept of transaction-construction flow	Guided task, code examples	Explain the basic properties of the transaction	O1
4.	Procedure	Guided task, code examples	Create queries over the database using procedures	O2
5.	Functions	Guided task, code examples	Create queries over the database using functions	O2
6.	Exercise 1	Independent preparation of the exercise	Create simple queries using transactions, procedures and functions	O2
7.	Procedures and flow control	Guided task, code examples	Apply basic syntax when creating and controlling the flow	O2
8.	Exercise 2	Independent preparation of the exercise	Create more complex queries using the procedure	O2
9.	Triggers	Guided task, code examples	Form queries using triggers	O3
10.	Exercise 3	Independent preparation of the exercise	Apply triggers to control the flow	O3
11.	Permits and locks	Guided task, code examples	Explain ways to apply permits and locks	O3

<b>12.</b>	Exercise 4	Independent preparation of the exercise	Build queries using permissions and data locking	O3
<b>13.</b>	Use a scripting language to work with DB	Guided task, code examples	Connect the database using a scripting language	O4
<b>14.</b>	Exercise 5	Independent preparation of the exercise	Create an application part of the code to connect to DB	O4
<b>15.</b>	Data warehouses	Direct teaching (lecture, instruction, pp presentation)	Explain the role of data warehousing	O4