



## SYLLABUS

### 1. Study programme

1.1. Higher education institution	„Aurel Vlaicu” University of Arad
1.2. Faculty	of Exact Sciences
1.3. Department	Department of Mathematics and Computer Science
1.4. Field of study	Informatics
1.5. Study level	2024-2025
1.6. Ciclul de studii	Bachelor
1.7. Study programme / Qualification	Computer Science
1.8. Form of education	Full-time study

### 2. Course details

2.1. Name of the course	GIAS4009 Database management system
2.2. Course coordinator	dr. Nagy Mariana
2.3. Seminar/laboratory/project coordinator	specialist Petcuț Lasc Anca Adriana
2.4. Study year	2
2.5. Semester	2
2.6. Evaluation type	ES
2.7. Course type	Ob

### 3. Estimated total time (hours per semester)

3.1. Hours per week	4
3.2. Lecture hours per week	2
3.3. Seminar/laboratory/project hours per week	2
3.4. Total hours per curriculum	56
3.5. Lecture hours per semester	28
3.6. Seminar/laboratory/project hours per semester	28
Time division [hrs]	
3.4.1. Independent study from textbooks, course support, bibliography and notes	25
3.4.2. Additional reading (libraries, specialized electronic platforms and field research)	20
3.4.3. Preparing of seminars/laboratories/projects, homework, papers, portfolios and essays	10
3.4.4. Tutorial coaching	10
3.4.5. Examinations	4
3.4.6. Other activities	0
3.7. Total individual study hours	69
3.8. Total hours per semester	125
3.9. Number of ECTS credits	5

### 4. Prerequisites (if applicable)

4.1. Curriculum related	Database – 2nd study year
4.2. Competence related	Use of the specific terms; Understanding the concept, creating and manipulating a database

### 5. Conditions (if applicable)

5.1. for the lecture	Lecture room equipped with laptop, projector, internet connection and proper software.
5.2. for the seminar	
5.3. for the laboratory	Laboratory Room, equipped properly with: computers, computer network, Internet connection, database software
5.4. for the project	

### 6. Specific educational objectives (competences to be acquired)

6.1. Competențe profesionale	C1.Programming in high level programming languages; C3.Using computer tools in interdisciplinary context; C5.Database design and database management.
6.2. Competențe transversale	CT2.Efficient conduct of the activities organized in an inter-disciplinary group and developing the personal communication skills, networking and collaboration with various groups; CT3.Using of efficient methods and techniques for learning, informing, research and development of the capacity to value knowledge, adapting to the requirements of a dynamic society and communicating in English and in an Internationally widespread language.

### 7. Course outcomes (resulting from the specific educational objectives to be acquired)

7.1. General outcomes	Systemic understanding of databases. Developing students' abilities to correctly apply the acquired knowledge and developing their analytical capacity
7.2. Specific outcomes	Students will be able: • To design, to implement a database in MySQL; • To create web applications that use databases

### 8. Outline (if applicable)

8.1 Lecture Outline	Teaching methods	Remarks
Introduction □ Relational algebra. The advantages of the relational model. □ DBMS – evolution, implementations, software aspects. □ Client-server architecture	□ interactive exposition □ heuristic conversation □ demonstration	4 hrs
MySQL Fundamentals. □ Introductory notions MySQL clients. The main types of data in MySQL. Creating a MySQL database and tables. Deleting and modifying a table. Granting and revoking access privileges. □ Data access from a database, SQL queries. Modifying data in a database. Data sorting and grouping. Expressions and functions. Unions. Execution of instructions from an external file. Examples.	□ interactive exposition □ modeling □ exemplifying	6 hrs
Basics of the PHP language. PHP - MySQL integration.. □ Instructions. Blocks of instructions, Variables and PHP operators, Constants. Data types, Conversion between data types. Writing conditional PHP statements. Use Array. Using functions. Working with strings. □ The use of cookie variables. Working with files. Use PHP sessions. □ Connecting to the MySQL server. Closing the connection to the MySQL server. Removing unwanted error messages and warnings □ Examples	□ interactive exposition □ problematization □ exemplification	6 hrs
Processing in the database using PHP and MySQL: □ Creating and selecting a database. Creating tables. Adding data to the table. □ Checking queries that do not return table rows. Processing the results of deselection queries. □ Obtaining the number of columns from a MySQL table. Get the name of a column. Obtaining the length of the column. Get the MySQL indicators associated with a column. Get the MySQL type of a column. □ Determining the MySQL table associated with a column. Obtaining the complete structure of the result set. Non-sequential access to the columns of a result set.	□ interactive exposition □ documentation on the web □ problematization □ exemplification	6 hrs
Building an application. Principles. Examples.	□ interactive exposition □ problematization □ modeling □ web search	6 hrs
<b>8.2 Lecture References</b> <ol style="list-style-type: none"> <li>1. Braharu G., Limbajul SQL Pentru Inceputori, Ed. De Vis Software, 2018</li> <li>2. Bush J., Learn SQL Database Programming, Packt Publishing, 2020</li> <li>3. Mcgrath M., PHP and MySQL in easy steps, 2017</li> <li>4. Sfetcu N., Lucrul cu baze de date, Ed. Multimedia, 2021</li> <li>5. Taylor A.G., SQL For Dummies, 2018</li> <li>6. Thomson L., Welling L., PHP and MySQL Web Development, Addison-Wesley Educational Publishers Inc, 2006</li> <li>7. Vaswani V., Utilizarea și administrarea bazelor de date MySQL., Editura Rosetti Educational, București, 2010</li> </ol>		

8. *** <a href="https://archive.org/details/PHPMySQLForDummies, 2017">https://archive.org/details/PHPMySQLForDummies, 2017</a> 9. *** <a href="https://www.tutorialspoint.com/">https://www.tutorialspoint.com/</a>		
8.3 Seminar Outline	Teaching methods	Remarks
8.4 Seminar References		
8.5 Laboratory Outline	Teaching methods	Remarks
Creating a MySQL database and tables. Delete and modify a table. Granting and revoking access privileges.	<input type="checkbox"/> practise <input type="checkbox"/> web search	4 hrs
SQL queries. Modifying data from a database. Sorting and grouping data. Expressions and functions. <input type="checkbox"/> Unions. Execution of instructions from an external file.	<input type="checkbox"/> practise <input type="checkbox"/> web search <input type="checkbox"/> problem solving	6 hrs
Writing basic PHP scripts. Converting values from one type to another. <input type="checkbox"/> The if and else statements. The SWITCH instruction and its related instructions. The WHILE, DO WHILE, and FOR statements. <input type="checkbox"/> Accessing single-matrix data (table/array). String manipulation using various PHP functions.	<input type="checkbox"/> application <input type="checkbox"/> modeling <input type="checkbox"/> web search <input type="checkbox"/> team work	4 hrs
Connecting to the MySQL server. Closing the connection to the server. Detecting the occurrence of errors. Elimination of unwanted error messages and warnings.	<input type="checkbox"/> practise <input type="checkbox"/> web search	2 hrs
Creating and selecting a database. Creating tables. Adding data to the table. SELECT, UPDATE, INSERT and DELETE queries. Other MySQL functions.	<input type="checkbox"/> project <input type="checkbox"/> web search	4 hrs
Studying a PHP script useful for uploading files to the server	<input type="checkbox"/> interactive lecture <input type="checkbox"/> problem solving <input type="checkbox"/> web search <input type="checkbox"/> exemplifying	2 hrs
Building a functional application using PHP and MySQL	<input type="checkbox"/> project <input type="checkbox"/> modeling <input type="checkbox"/> web search <input type="checkbox"/> team work	6 hrs
8.6 Laboratory References  1. Braharu G., Limbajul SQL Pentru Incepatori, Ed. De Vis Software, 2018 2. Bush J., Learn SQL Database Programming, Packt Publishing, 2020 3. Mcgrath M., PHP and MySQL in easy steps, 2017 4. Sfetcu N., Lucrul cu baze de date, Ed. Multimedia, 2021 5. Taylor A.G., SQL For Dummies, 2018 6. Thomson L., Welling L., PHP and MySQL Web Development, Addison-Wesley Educational Publishers Inc, 2006 7. Vaswani V., Utilizarea și administrarea bazelor de date MySQL., Editura Rosetti Educational, București, 2010 8. *** <a href="https://archive.org/details/PHPMySQLForDummies, 2017">https://archive.org/details/PHPMySQLForDummies, 2017</a> 9. *** <a href="https://www.tutorialspoint.com/">https://www.tutorialspoint.com/</a>		
8.7 Project Outline	Teaching methods	Remarks
8.8 Project References		

9. Correlation of course outline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

The content of the discipline is consistent with the content of similar disciplines from other university centers in the country and abroad. In order to better adapt the content of the discipline to the requirements of the labor market, meetings were held both with employers - representatives of the business environment and with mathematics and computer science teachers from the Arad pre-university education.

#### 10. Evaluation / Grading (if applicable)

Activity type	Evaluation criteria	Evaluation methods	Percentage of the final grade
10.1. Lecture	<input type="checkbox"/> correctness and completeness of knowledge <input type="checkbox"/> logical consistency <input type="checkbox"/> the degree of assimilation <input type="checkbox"/> conscientiousness, interest in study	Oral assessment (final exam): <input type="checkbox"/> presentation of the project <input type="checkbox"/> conversation evaluation <input type="checkbox"/> Free Exposure <input type="checkbox"/> Oral Questioning active participation in courses	30% 10%
10.2. Seminar			
10.3. Laboratory	<input type="checkbox"/> ability to apply the acquired knowledge <input type="checkbox"/> ability to apply the acquired knowledge <input type="checkbox"/> conscientiousness, interest in study	<input type="checkbox"/> finalization of the required project Homework and projects done during the semester active participation in laboratories	30% 20% 10%
10.4. Project			

10.5 Minimal performance standard

**The appropriate acquirement of basic theoretical concepts and the capability to apply them for building a basic application.**

Course coordinator  
Prof. dr. Nagy Mariana

Seminar/laboratory/  
project coordinator  
dr. specialist Petcuț Lasc  
Anca Adriana

Head of the Department  
Lecturer dr. Lorena POPA

Dean  
Prof. dr. Sorin NĂDĂBAN