

SYLLABUS

DATABASE MANAGEMENT SYSTEMS

1. Information on academic programme

1.1. University	„1 Decembrie 1918” University of Alba Iulia
1.2. Faculty	Faculty of Informatics and Engineering
1.3. Department	Informatics, Mathematics and Electronics
1.4. Field of Study	Computer Science
1.5. Cycle of Study	Undergraduate
1.6. Academic programme / Qualification	Computer Science

2. Information of Course Matter

2.1. Course		Database Management Systems		2.2. Code		CSE 212	
2.3. Course Leader			Muntean Maria-Viorela				
2.4. Seminar Tutor			Muntean Maria-Viorela				
2.5. Academic Year	II	2.6. Semester	II	2.7. Type of Evaluation (E – final exam/ CE - colloquy examination / CA -continuous assessment)	E	2.8. Type of course (C- Compulsory, Op – optional, F - Facultative)	C

3. Course Structure (Weekly number of hours)

3.1. Weekly number of hours	4	3.2. course	2	3.3. laboratory	2
3.4. Total number of hours in the curriculum	56	3.5. course	28	3.6. laboratory	28
Allocation of time:					Hours
Individual study of readers					30
Documentation (library)					10
Home assignments, Essays, Portfolios					25
Tutorials					2
Assessment (examinations)					2
Other activities					-

3.7 Total number of hours for individual study	69
3.9 Total number of hours per semester	125
3.10 Number of ECTS	5

3. Prerequisites (where applicable)

4.1. curriculum-based	1. Databases
4.2. competence-based	-

5. Requisites (where applicable)

5.1. course-related	Room equipped with video projector / board / Microsoft Teams Platform
5.2. laboratory-based	Laboratory – computers, Software: XAMPP minimum 1.7, Notepad++, Internet access / Microsoft Teams Platform

6. Specific competences to be acquired (chosen by the course leader from the programme general competences grid)

Professional competences	<p>C5. Design and management of databases</p> <p><i>C5.1. The identification of base concept for organizing data in databases.</i></p> <p><i>C5.2. The identification and explanation of base models for the organizing and management of data in databases.</i></p> <p><i>C5.3 The use of methodologies and database design environments for specific problems.</i></p> <p><i>C5.4. The evaluation of quality for various database management systems regarding structure, functionality and extensibility.</i></p> <p><i>C5.5. The development of various database related projects.</i></p>
Transversal competences	-

7. Course objectives (as per the programme specific competences grid)

7.1 General objectives of the course	<ul style="list-style-type: none"> - <i>Acquiring knowledge of design and web database management;</i> - <i>Acquiring knowledge of data organization according to the requirements of web communication, specific query;</i> - <i>Developing skills for dialogue between web technologies and databases;</i> - <i>Developing skills in validation databases using specific Web technologies.</i>
7.2 Specific objectives of the course	-

8. Course contents

8.1 Course (learning units)	Teaching methods	Remarks
1. INTRODUCTION TO DATABASES	Lecture, conversation, exemplification	Course 1 2h
2. CLIENT-SERVER DATABASE STRUCTURES 2.1 Bi-dimensional databases 2.2. Redundant data in client-server applications 2.3. A comparison of client-server databases architectures	Lecture, conversation, exemplification	Course 2-3 4h
3. MODERN APPROACHES IN COLLECTING AND STRUCTURING DATA 3.1. Introduction to PHP object-oriented programming 3.2. Introduction to MySQL 3.3. PHP-MySQL database application development 3.4. The main MySQL commands 3.5. High level of application development and administration in DBMS	Lecture, conversation, exemplification	Course 4-6 6h
4. STANDARD TRANSACTIONS IN DBMS APPLICATIONS	Lecture, conversation, exemplification	Course 7 2h
5. SERVICE-ORIENTED ARCHITECTURE DESIGN	Lecture, conversation, exemplification	Course 8

		2h
6. CLASSES AND COMPATIBILITES IN DESIGNING CLIENT-SERVER APPLICATIONS	<i>Lecture, conversation, exemplification</i>	Course 9 2h
7. CONFIGURATION OF CLIENT-SERVER APPLICATIONS WITH DBMS SUPPORT 7.1. Configuration of service-oriented client-server applications 7.2. Configuration of data mining oriented client-server applications	<i>Lecture, conversation, exemplification</i>	Course 10-11 4h
8. INFORMATION SCALABILITY 8.1 Information retrieval techniques in client-server applications 8.2 Information retrieval techniques by using JOIN method 8.3 Types of JOINS used in knowledge discovery in databases	<i>Lecture, conversation, exemplification</i>	Course 12-13 4h
9. CONCLUSIONS	<i>Lecture, conversation, exemplification</i>	Course 14 2h
Laboratories	Teaching methods	
1. PHP-MySQL installation steps. Running mixed HTML – PHP pages. Running scripts deployed on the local server. 1.1. Database basics 1.2. PHP installation 1.3. MySQL installation 1.4. MySQL Front installation 1.5. Practicing mixed HTML – PHP pages 1.6. Practicing scripts deployed on local server.	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 1 2h
2. Database design 2.1. Database design 2.2. Analysis / data normalization 2.3. Relationships 2.4. Restrictions 2.5. Identifying „tuning” elements from the database 2.6. Database implementation using MySQLFront 2.7. Establishing a connection between the client and the database server. Checking the functionality of the connection.	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 2 2h
3. Testing the PHP INSERT command 3.1. Placing objects required to data manipulation in the database 3.2. Checking the data types designed in http://dev.mysql.com/doc/refman/5.0/en/char.html 3.3. Checking the object names and field names from the database 3.4. Testing the PHP INSERT command	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 3 2h
4. Testing other main operations of a DBMS. Testing editing operation. 4.1. Testing other main operations of a DBMS	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 4

<ul style="list-style-type: none"> a. Queries b. Ordering views by certain parameters c. Querying a value and generating a particular type of response from the server 4.2. Testing the editing tasks by using a specific bookmark a. Associate a recordset procedure with DBMS exploitation 4.3. Testing the delete operation a. Activate specific safety features 		2h
5. Views. Displaying views in Web applications	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 5 2h
6. Stored procedures. Applications	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 6 2h
7. Stored functions. Applications	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 7 2h
8. Triggers. Applications	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 8 2h
9. Transactions. Applications	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 9 2h
10. Database replication. Examples	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 10 2h
11. Orienting / restructuring applications as tasks, services, objects, transactions. <ul style="list-style-type: none"> 11.1. Orienting / restructuring applications as tasks, services, objects, transactions. 11.2. Using the “include” method 11.3. Testing the applications on different server versions. 	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 11 2h
12. Distinct application integration in a large and complex application. <ul style="list-style-type: none"> 12.1. Distinct application integration in a large and complex application. 12.2. Testing the application functionality. 	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 12 2h
13. Presentation of the complex application developed <ul style="list-style-type: none"> 13.1. Presentation of the complex application developed 13.2. Documenting the Web application 13.3. Verifying the non-redundancy of the application. 	<i>Project-work, computer-based activities, laboratory activities</i>	Laboratory 13-14 4h
References <ol style="list-style-type: none"> 1. SQL COOKBOOK: Query Solutions and Techniques for All SQL Users, Anthony MOLINARO; Robert de GRAAF (2021), ISBN: 9781492077442. 2. W. Jason Gilmore, Beginning PHP and MySQL From Novice to Professional, Fourth Edition, Apress, 2010, 		

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5. Janet Valade, PHP and MySQL For Dummies, 4th Edition, 2009, ISBN: 978-0-470-52758-0.
6. Kroenke, David M, Database Processing: Fundamentals, Design & Implementation, New Jersey: Prentice Hall, 2000.
7. Saeed K. Rahimi, Frank S. Haug, Distributed Database Management Systems: A Practical Approach, Hoboken, New Jersey: Wiley Publishing INC, 2010.
8. Lambert M. Surhone, Mariam T. Tennoe, Susan F. Henssonow, Distributed Database: Database Management System, Computer Storage, Routing Protocol, Beau Bassin, Mauritius: Betascript Publishing, 2010.
9. Weinberg, P., Groff, J., Opper, A., SQL The Complete Reference, Third Edition, The McGraw-Hill Companies, Inc., ISBN: 978-0-07-159255-0, 2010.
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11. Shea, Dave; Holzshlag E. Molly – The Zen of CSS Design: Visual Enlightenment for the Web – Peachpit Press, 2005.
12. Graham, Ian; Quin, Liam – The XML Specification Guide, John Wiley and Sons, 2000.
13. Danesh, Arman – Javascript in 10 Steps or Less, Wiley Publishing Inc., 2004.
14. Moulding, Peter – The PHP Black Book – Paraglyph Publishing, 2002.
15. Welling, Luke; Thomson Laura – Php and MySQL Web Development, Sams, 2001.
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1. Corroboration of course contents with the expectations of the epistemic community’s significant representatives, professional associations and employers in the field of the academic programme

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2. Assessment

Activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade
10.4 Course	<i>Final evaluation</i>	<i>Written evaluation</i>	50%
10.5 Laboratory	<i>Laboratory activities portfolio</i>	<i>Practical evaluation</i>	50%

10.6 Minimum performance standard: minimum 5 at written evaluation and minimum 5 at practical evaluation.

C5.1. The identification of base concept for organizing data in databases.

C5.2. The identification and explanation of base models for the organizing and management of data in databases.

C5.5. The development of various database related projects.

Submission date

Course leader signature

Laboratory tutor signature

Date of approval by Department members

Department director signature
