SYLLABUS

DATABASE MANAGEMENT SYSTEMS

1. **Information on academic programme**

1.1. University	**„1 Decembrie 1918" of Alba Iulia**
1.2. Faculty	**Faculty of Informatics and Engineering**
1.3. Department	**Informatics, Mathematics and Electronics Department**
1.4. Field of Study	**Computer Science**
1.5. Cycle of Study	**Undergraduate**
1.6. Academic programme / Qualification	**Computer Science** **ESCO-08: 2511/ Systems Analyst, 2512/ Software developers** **Analyst 251201** **Computer System Programmer 251204** **Computer System Engineer 251203**

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**
3.8 Total number of hours in the curriculum	**56**
3.9 Total number of hours per semester	**125**
3.10 Number of ECTS	**5**

4. 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 aquired (chosen by the course leader from the programme general competences grid)

Professional competences	***C5. Design and management of databases*** *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.* *C5.3 The use of methodologies and database design environments for specific problems.* *C5.4. The evaluation of quality for various database management systems regarding structure, functionality and extensibility.* *C5.5. The development of various database related projects.*
Transversal competences	-

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

7.1 General objectives of the course	- *Acquiring knowledge of design and web database management;* - *Acquiring knowledge of data organization according to the requirements of web communication, specific query;* - *Developing skills for dialogue between web technologies and databases;* - *Developing skills in validation databases using specific Web technologies.*
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	*Lecture, conversation, exemplification*	Course 4-6 6h

in DBMS		
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	*Lecture, conversation, exemplification*	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	*Lecture, conversation, exemplification*	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	*Lecture, conversation, exemplification*	Course 12-13 4h
9. CONCLUSIONS	*Lecture, conversation, exemplification*	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.
	Project-work, computer-based activities, laboratory activities	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.
	Project-work, computer-based activities, laboratory activities	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
	Project-work, computer-based activities, laboratory activities	Laboratory 3
		
		2h

4. Testing other main operations of a DBMS. Testing editing operation.
    4.1. Testing other main operations of a DBMS
    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
	Project-work, computer-based activities, laboratory activities	Laboratory 4
		
		2h

5. Views. Displaying views in Web applications	*Project-work, computer-based activities, laboratory activities*	Laboratory 5 2h
6. Stored procedures. Applications	*Project-work, computer-based activities, laboratory activities*	Laboratory 6 2h
7. Stored functions. Applications	*Project-work, computer-based activities, laboratory activities*	Laboratory 7 2h
8. Triggers. Applications	*Project-work, computer-based activities, laboratory activities*	Laboratory 8 2h
9. Transactions. Applications	*Project-work, computer-based activities, laboratory activities*	Laboratory 9 2h
10. Database replication. Examples	*Project-work, computer-based activities, laboratory activities*	Laboratory 10 2h

11. Orienting / restructuring applications as tasks, services, objects, transactions.
    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.
	Project-work, computer-based activities, laboratory activities	Laboratory 11
		
		2h

12. Distinct application integration in a large and complex application.
    12.1. Distinct application integration in a large and complex application.
    12.2. Testing the application functionality.
	Project-work, computer-based activities, laboratory activities	Laboratory 12
		
		2h

13. Presentation of the complex application developed
    13.1. Presentation of the complex application developed
    13.2. Documenting the Web application
    13.3. Verifying the non-redundancy of the application.
	Project-work, computer-based activities, laboratory activities	Laboratory 13-14
		
		4h

References

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, ISBN-13 (pbk): 978-1-4302-3114-1, ISBN-13 (electronic): 978-1-4302-3115-8.
3. Larry Ullman, PHP and MySQL for Dynamic Web Sites: Visual QuickPro Guide (4th Edition), 2011, ISBN-10:

    0321784073, ISBN-13: 978-0321784070.
 4. Williams E. Hugh; Lane, David – Web Database Applications with PHP and MySQL, O'Reilly and Associates, 2002.
 5. Janet Valade, PHP and MySQL For Dummies, 4th Edition, 2009, ISBN: 978-0-470-52758-0.
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 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., Oppel, A., SQL The Complete Reference, Third Edition, The McGraw-Hill Companies, Inc., ISBN: 978-0-07-159255-0, 2010.
 10. Graham Ian – The XHTML 1.0 Web Development Sourcebook, John Wiley and Sons, 2000.
 11. Shea, Dave; Holzshlag E. Molly – The Zen of CSS Design: Visual Enlightement 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.
 16. www.w3schools.com
 17. www.php.net

9. 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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10. Assessment

Activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade
10.4 Course	*Final evaluation*	*Written evaluation*	50%
10.5 Laboratory	*Laboratory activities portfolio*	*Practical evaluation*	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
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Date of approval by Department members   Department director signature
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