

UNIVERSITY OF ECONOMICS - VARNA
MASTER DEGREE STUDIES CENTER
DEPARTMENT „INFORMATICS“

ACCEPTED BY:

Rector:

(Prof. Dr. Plamen Iliev)

SYLLABUS

SUBJECT: “DATABASE FUNDAMENTALS”;

DEGREE PROGRAMME: “Computer Science”; MASTER`S DEGREE

YEAR OF STUDY: 5; SEMESTER: 9 (other fields graduates);

TOTAL STUDENT WORKLOAD: 360 h.; incl. curricular 60 h.

CREDITS: 12

DISTRIBUTION OF WORKLOAD ACCORDING TO THE CURRICULUM

<i>TYPE OF STUDY HOURS</i>	WORKLOAD, h.	TEACHING HOURS PER WEEK, h
CURRICULAR:		
incl.		
• LECTURES	30	2
• SEMINARS (lab. exercises)	30	2
EXTRACURRICULAR	300	-

Prepared by:

1.
(Prof. Dr. Vladimir Sulov)

2.
(Chief Assist. Prof. Dr. Ivan Kuyumdzhiev)

Head of department:
“Informatics” (Prof. Dr. Vladimir Sulov)

I. ANNOTATION

The course "Database Fundamentals" provides students with fundamental knowledge on essential concepts of databases, database management system database (DBMS) and the SQL language - standard for working with relational databases. Gained knowledge form practical skills for the design and implementation of relational databases and programming scripts in SQL language.

Practical exercises using up to date licensed software develop research skills and the ability to search and decision making on case studies. Coursework assignment allows the formation and development of students' teamwork skills.

The knowledge and skills are used and expanded in other disciplines including programming and moblie aplication development..

II. THEMATIC CONTENT

No.	TITLE OF UNIT AND SUBTOPICS	NUMBER OF HOURS		
		L	S	L.E.
1. Introductuin to databases		4		1
1.1	Databases – basic concepts, terminology.	2		
1.2	Data independence, controlled redundancy, data cnsistency, database integrity, data security, reliability	2		1
2. Data Models		4		6
2.1	Introduction to database models. Classification	1		1
2.2	Entity–relationship model.	3		5
3. Relational databases		4		6
3.1	Relational model - basic concepts (relation, relational diagrams, keys, integrity of the relational model). Defining a relational database model	2		3
3.2	Relational algebra - projection, intersection, selection, natural join,cartesian product, union, difference..	2		3
4. Structured Query Language (SQL)		15		16
4.1	SQL – features, standards, basic operators	2		2
4.2	Data integrity. Mechanisms to ensure data integrity – PRIMARY KEY, UNIQUE, FOREIGN KEY, CHECK.	2		2
4.3	SQL. Create queries to extract data from one table; set the criteria for selecting records; set computed columns. Order the results.	2		3
4.4	SQL - extract data from multiple tables; join tables. Subqueries and Correlated Subqueries	3		3
4.5	SQL – aggregating data with GROUP BY.	4		4
4.6	SQL – update and delete queries.	2		2
5. Database Management Systemst (DBMS)		3		1
5.1	DBMS - history, examples, desin nad modeling, languages	3		1
Total:		30		30

III. FORMS OF CONTROL:

No. by row	TYPE AND FORM OF CONTROL	№	extra-curricular, h.
1.	Midterm control		
1.1.	Practice Test	2	50
1.2.	Course project	1	80
Total midterm control:		3	130
2.	Final term control		
2.1.	Multiple value test	1	80
2.2.	Practice test	1	90
Total final term control:		2	170
Total for all types of control:		5	300

IV. LITERATURE

REQUIRED (BASIC) LITERATURE:

1. Hernandez, M. (2013) Database Design for Mere Mortals: A Hands-On Guide to Relational Database Design, Addison-Wesley
2. Andrew Cumming A., Gordon Russell G. (2006) SQL Hacks. O'Reilly Media, Inc
3. Microsoft SQL Server Books Online - msdn.com

RECOMMENDED (ADDITIONAL) LITERATURE:

1. Rankins , R. (2015) Microsoft SQL Server 2014 Unleashed. Sams Publishing