



COURSE DESCRIPTION

1. Program Information

1.1 University	“Alexandru Ioan Cuza” University of Iasi
1.2 Faculty	Computer Science
1.3 Department	Computer Science
1.4 Study Domain	Computer Science
1.5 Study Cycle	Bachelor of Science
1.6 Study Program / Qualification	Bachelor of Science

2. Course Information

2.1 Course Name	Practice for Data Base Gestion Systems						
2.2 Course Teacher	LECTURER NICOLAE COSMIN VARLAN, PHD						
2.3 Seminary Teacher	LECTURER NICOLAE COSMIN VARLAN, PHD						
2.4 Study Year	II	2.5 Semester	I	2.6 Evaluation	M	2.7 Course Status	OB

* OB – Compulsory / OP – Optional

3. Total estimated hours (hours per semester and didactic activities)

3.1 Hours per week	3	in which: 3.2 course	1	3.3 seminary/laboratory	2
3.4 Hours in curriculum	42	in which: 3.5 course	14	3.6 seminary/laboratory	28
Time Distribution	hours				
Manual study, Course support, Bibliography, and others	14				
Supplementary Documentation in library, in electronic forums, and on the field	28				
Seminaries/laboratories preparation, homeworks, reports, portfolios and essays	28				
Tutoring	-				
Evaluation	4				
Other activities (consultations per student)	-				
3.7 Total hours individual study	70				
3.8 Total hours per semester	116				
3.9 Credits	4				

4. Preconditions (if necessary)

4.1 Of Curriculum	Data Bases
4.2 Of Skills	Procedural Programming

5. Conditions (if necessary)

5.1 For Course Operation	-
5.2 For Seminary/Laboratory Operation	Mandatory presence



6. Specific Skills Acquired

Professional Skills	C1. Optimally create large databases that can be concurrently accesses. C2. Students have to be able to explain, build and use indexes in order to optimize interogations in a database C3. Analyze and optimize interogations in order for Query Optimizer to find better execution plans. C4. Write PL/SQL scripts: procedures, functions, packages, triggers, exceptions, colections C5. Write dynamic SQI using DBMS_SQL
Transversal Skills	CT1. Integration and usage of different database ORMs (like Java, C#, PHP, etc.) CT2. Building databases starting from a specific schema.

7. Course Objectives (from the grid of specific skills acquired)

7.1 General Objectives	Correct indexing of Data bases, Knowing and using of PL/SQL programming language, Creating scripts that can be directly executed by servers
7.2 Specific Objectives	At the end of the course, students have to be capable to: <ul style="list-style-type: none">▪ Explain the utility and the necessity of using indexes in order to facilitate the acces to informations▪ Describe how an index is used and how a good index affect different interogations types▪ Using PL/SQL to manipulate data direct on the server▪ Analyze and optimize interogations▪ Using tools (like SQL+ or SQL Developer) in order to build scripts▪ Create triggers, work with exceptions, create different procedures and functions, build packages etc.

8. General Description

8.1	Course	Teaching Methods	Observations (hours and bibliographic references)
1.	Index anatomy, Where, Functions and Function Based Indexes	Presentation	2
2.	Bind parameters, searching on intervals, partial indexing	Presentation	2
3.	Obfuscation methods, Scalability	Presentation	2
4.	Algorithms used for JOIN Operation	Presentation	2
5.	Clustering informations, sorting and grouping	Presentation	2



6.	Partial results, inserting, deleting and updating	Presentation	2
7.	Transactions and introduction to NoSQL	Presentation	2

Bibliography**Main references:**

- M. Winand, *SQL Performance Explained*, 2012
- Avi Silberschatz Henry F. Korth S. Sudarshan. "Database System Concepts". McGraw-Hill Science/Engineering/Math; 6 edition

Supplementary references:

<http://use-the-index-luke.com/>

http://docs.oracle.com/cd/A97630_01/appdev.920/a96624/01_oview.htm

http://docs.oracle.com/cd/B19306_01/server.102/b14231/indexes.htm

8.2	Seminary / Laboratory	Teaching methods	Observations (hours and bibliographic references)
1.	Variables and anonymous blocks in PL/SQL	Individual programming and presentations	2
2.	Finding Data	Individual programming and presentations	2
3.	PL/SQL: IF, CASE, WHILE, FOR	Individual programming and presentations	2
4.	Functions and procedures	Individual programming and presentations	2
5.	Exceptions in PL/SQL	Individual programming and presentations	2
6.	Packages	Individual programming and presentations	2
7.	Triggers	Individual programming and presentations	2
8.	Dynamic SQL (using DBMS_SQL)	Individual programming and presentations	2
9.	Building Views, Dictionary	Individual programming and presentations	2
10.	Colections	Individual programming and presentations	2
11.	Objects	Individual programming and presentations	2
12.	Project	Work in team of 2 students to build an SQL based project	2
13.	Project	Work in team of 2 students to build an SQL based project	2
14.	Project evaluation	Evaluation of projects	2

**Bibliography**

Oracle Academy curricula:

http://profs.info.uaic.ro/~vcosmin/index.php?pagina=pagini/practica_sgbdhttp://docs.oracle.com/cd/A97630_01/appdev.920/a96624/whatsnew.htm**9. Course content synchronization with the expectations of the community representatives, professional associations and employers from the program domain**

Nowadays applications usually manipulate a vast amount of data. In this course students will understand various factors that influence the speed of executing different types of interogations, will learn about how to build a proper index and how interogations should be formulated based on those indexes. These informations have to be known by all programers who might eventually work with data bases.

10. Evaluation

Activity Type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 The weight of each evaluation form (%)
10.4 Course	<ul style="list-style-type: none">- understanding how an index works- known various factors that influence the speed of executions when JOIN, GROUP or SORT operations are used- proformance and scalability of databases	Written tests on some courses	
10.5 Seminary/ Laboratory	<ul style="list-style-type: none">- ability to build PL/SQL scripts for each tematic proposed in first eleven laboratories- building a project	Evaluations of 12 small homeworks Evaluation of final project	

10.6 Minimal performance standards

To pass this course, the student has to obtain a minimum of 50 points (equivalent of 5 homeworks). The points can be obtained from both the activity during the semester and the flash tests at the courses. The other grades are obtained based on a scale (60pts = grade 6, 75pts = 7, 95pts=8, 120pts=9, 150pts=10).

Date
23.03.2014Course Teacher
Lect. Cosmin Nicolae VÂRLAN, PhDSeminary/Laboratory Teacher
Lect. Cosmin VÂRLAN, PhD

Department Date of Approval

Director of the Department