Course specifications

Programme(s) on which the course is given **B.Sc. of Pure Mathematics and Computer Scienc e, Physics and Computer science**

Major or minor element of programs **Major**

Department offering the program **Mathematics**

Department offering the course **Mathematics**

Academic year / Level **Third level (3)**

Date of specification revision **September 2012**

Date of specification approval **September 2012**

A- Basic Information

Title: Database systems **Code: M3310**

Credit Hours: 4 **Total: 4 hr.**

Lecture: 3 **Tutorial: -** **Practical: 2** **Other: -**

B- Professional Information

1 – Overall aims of course

1. **Understand issues related to the design and implementation of relational database systems.**
2. **Be able to develop a semantic data model based on high-level requirements.**
3. **Be able to develop a relational database model given a semantic data model and high level requirements.**
4. **Be able to implement a relational database using a current relational database management system and related tools.**
5. **Be able to analyze a relational design on the basis of functional dependencies and other relational integrity constraints.**

6. **Understand design trade-offs related to structure and performance of relational database systems.**
7. **Understand fundamental file organization and physical implementation issues for relational database systems.**
8. **Understand issues related to application development for relational database systems.**

2 – Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

The student should be able to;

a1- Demonstrate basic different database structures available.

a2- Know and understand basic techniques in relational database.

a3- Recognize how to design and implement relational databases.

a4- Explain the meaning of statement in SQL,Oracle programming.

b- Intellectual skills

The student should be able to;

b1- Develop skills for database design and implementation.

b2- Develop appropriate semantic data models.

b3- Develop and evaluate trade-offs related to structure and performance of relational database systems.

b4- Apply appropriate database security, efficiency, and accuracy issues.

c- Professional and practical skills

The student should be able to;

c1- Specify and express SQL queries using SQL Server based on the tools learned in the course.

c2- Use semantic data models.

c3- Specify and design practice relational database design.

c4-Choose and apply test functional dependencies.

d- General and transferable skills

The student should be able to;

d1- Employ SQL queries for solving database problems using the materials taught in the course.

d2- Work in a team effectively to express models for database design.

d3-Think independently to manage relational database administration tools.

d4-Use information to compare physical and logical file organization.

3- Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
Overview of database systems (2 hours)	4	1	1
Database design and entity relationship modeling	8	2	2
Overview of the relational model	8	2	2
Relational algebra	4	1	1
SQL	4	1	1
Functional dependencies	4	1	1
Normal forms	4	1	1
Database application development	4	1	1
Internet applications	4	1	1
Indexing and storage	4	1	1
Query evaluation and optimization	4	1	1
Security	4	1	1

4– Teaching and learning methods

4.1- Lectures

4.2- Working on hand in assignments

4.3- Attending practical classes

5- Student assessment methods

5.1 Mid term written exam to assess understanding competencies

5.2 Mid term practical Exam to assess programming skills

5.3 Oral Exam to assess attendance and interesting.

5.4 Semester hand in assignments to assess understanding professionalism.

5.5 Final lap exam to assess a whole lap skills

5.6 Final term written Exam to assess comprehension.

Assessment schedule

Assessment 1	**Mid term + practical**	**Week 7**
Assessment 2	**semester activities**	**Week 5 and 8**
Assessment 3	**Final term oral exam + lap**	**Week 13**
Assessment 4	**final term written exam**	**Week 14**

Weighting of assessments

Mid-Term Examination

20%

Semester Work (homework assignments + oral tests)

20 %

Other types of assessment

00%

Final-term written Examination

60%

Total

100%

Any formative only assessments

6- List of references

6.1- Course notes

Collected and prepared notes that cover the main topics in the course content

6.2- Essential books (text books)

Elementary text books under the title : *Database Management Systems,*

6.3- Recommended books :

6.4- Periodicals, Web sites, … etc

Non.

7- Facilities required for teaching and learning

Lecture: PC's - packages for ready made scientific programs. - Data Show.

Lap: Advanced lap contains SQL server 2000 (or 2005) package.

Names of professors/lecturers contributing to the design and delivery of the course

Dr. Passent El-Kafrawy

Dr. Hany Ibrahim

Course coordinator: Dr. Hani M Ibrahem

Head of Department: Prof. Mohamed A. Ramadan

Date: / /