



University/Academy: Arab Academy for Science, Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: B.Sc Computer Engineering

Form no. (12): Course Specification

1- Course Data

Course Code: CC414	Course Title: Database Design	Academic Year/Level: 4th year / 7th semester
Specialization: Computer Engineering	No. of Instructional Units 3	Lecture 2
		Practical 2

2- Course Aim

To develop analysis skills in the design and analysis of database systems with applications to the market and some real life problems.

3- Intended Learning Outcomes

a- Knowledge and Understanding	<p>Through knowledge and understanding, students will be able to:</p> <p>a1. Concepts and theories of mathematics and sciences, appropriate to the computer engineering.</p> <p>a6. Related research and current advances in the field of computer software and hardware and contemporary engineering topics.</p> <p>a8. Modern trends in information technology and its fundamental role in business enterprises.</p> <ul style="list-style-type: none"> • Define the database and the need of it • Explain problems with file systems, and database systems advantages • Define relational algebra and how to deal with it • Explain how to analyze the Word problems into an ERD • Analyze some word problems to get an ERD • Discuss the conversion into a relational Model • Discuss the Data Redundancy problems • Explain first, second and third normal form • Discuss Boyscodd Normal Form • Differentiate between the two normalization methods • Define XML • Describe trees building • Define concurrency control and the need for mutual exclusion
b- Intellectual Skills	<p>Through intellectual skills, students will be able to:</p> <p>b2. Think in a creative and innovative way in problem solving and design using the latest technologies and solve engineering problems, often on the basis of limited and possibly contradicting information while identifying symptoms in problematic situations.</p> <p>b4. Assess and evaluate the characteristics and performance of components, systems and processes and investigate their failure.</p> <p>b5. Select, synthesize, and apply suitable IT tools to computer engineering</p>

	<p>problems.</p> <p>b6. Propose various computer-based solutions to business system problems and perform cost-benefit analysis especially in sensitive domains where direct and indirect costs are involved.</p> <ul style="list-style-type: none"> • Solve relational algebraic problems • Draw an ERD from a word problem • Discuss the Functional Dependencies • Convert the ERD to a Relational Model • Classify the degree of an ERD as the first, second or Third normal form • Simplify the ERD to get the Third Normal Form • Simplify the ERD to get the most normalized form using BCNF • Differences between the two normalization methods • Exercise on the XML using and building
C- Professional Skills	<p>Through professional and practical skills, students will be able to:</p> <p>c2. Create and/or re-design a process, component or system, and carry out specialized engineering designs with neatness and aesthetics in design and approach.</p> <p>c6. Exchange knowledge and skills with engineering community and industry.</p> <p>c8. Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development.</p> <p>c9. Write computer programs on professional levels achieving acceptable quality measures in software development. Conduct user support activities competently.</p> <ul style="list-style-type: none"> • Build simple queries using Oracle. • Build tables using Oracle. • Exercise to build a whole database using Oracle • Code XML files
d- General Skills	<p>Through general and transferable skills, students will be able to:</p> <p>d1. Collaborate effectively within multidisciplinary teams.</p> <p>d3. Demonstrate efficient IT capabilities</p> <ul style="list-style-type: none"> • Verify theory with practice(Project First Stage) • Verify theory with practice(Project Second Stage) • Verify theory with practice(Project Third Stage) • Verify theory with practice on the project(Project Fourth Stage) • Verify with practice on project (Project Pre-Final Stage) • Project Final stage.

4- Course Content

Week No.1	Introduction to Database systems
Week No.2	File systems Vs. Automated Systems
Week No.3	Relational Algebra
Week No.4	ERD
Week No.5	ERD, Cont'd

Week No.6	Relational Model
Week No.7	7th week Exam
Week No.8	Normalization
Week No.9	Normalization, Cont'd.
Week No.10	BCNF
Week No.11	BCNF, Cont'd.
Week No.12	12th week Exam
Week No.13	XML
Week No.14	XML, Cont'd
Week No.15	Transaction Management
Week No.16	Presentation of projects and Final Exam.

5- Teaching and Learning Methods

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

6-Teaching and Learning Methods for Students with Special Needs

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

The academic advisors of each student, as well as dedicated department TAs monitor the students' progress and solve any problem he/she may encounter.

7- Student Assessment

a-Procedures used	1-Written Examinations to assess The Intended Learning Outcomes.	
	2-Class Activities (Reports, Discussions, -----) to assess The Intellectual Skills.	
b- Schedule:	Assessment 1	7 th Week Written Exam
	Assessment 2	12 th Week Written Exam
	Assessment 3	Continuous Assessments
	Assessment 4	16 th Week Final Written Exam
c- Weighing of Assessment	7 th Week Examination	25 %
	12 th Week Examination	15 %
	Final-term Examination	40 %
	Oral Examination	00 %
	Practical Examination	10 %
	Semester Work	10 %
	Total	100%

8- List of References:

a- Course Notes	
b- Required Books (Textbooks)	• Connolly, Thomas, <i>Database Systems: A Practical Approach</i> , 3 rd Edition, Addison Wesley, 2003
c- Recommended Books	
d- Periodicals, Web Sites, etc.	

Course Instructor:
Dr.Mohamed Kholief

Program Manager:
Prof. Dr. Mohamad AbouEl-Nasr

**Dean of College of Engineering and
Technology of AASTMT**

**Executive Manager of Quality Assurance
Center of AASTMT**

Name: **Prof. Moustafa Hussein Aly**

Name: **Prof. Aziz Ezzat**

Signature:

Signature: