



University: *Fayoum University*
 Faculty: *Computers and Information*
 Department: *Information Systems*



Course Specification

1- Basic Information		
Code: INF 372	Course Title: Database Management Systems	Year/Level: Third year – Second term
Programme: B.Sc degree in Information Systems	Number of units:	Lecture: 3 hrs/ week
		Tutorial: 0 hrs/ week
		Practical: 2 hrs/ week

2- Aims of Course:	<ol style="list-style-type: none"> 1. This course gives an overview of database architectures, including the Relational, Hierarchical, Network, and Object Models. Database interfaces, including the SQL query language; Database design using the Entity-Relationship Model. Issues such as security, integrity, and query optimization are discussed. 2. The course includes topics such as normalization, data quality management, implementation issues, database application development, concept of transactions, ODBC, JDBC, database tuning, and database Administration.
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3- Intended Learning Outcomes	
A- Knowledge and Understanding:	<p>A3. Demonstrate the essential mathematics and physics relevant to computer science</p> <ol style="list-style-type: none"> a1) A good understanding of fundamental concept s and issues of database Systems. a2) Design query optimization mathematics <p>A6. Explain essential concepts, principles, and theories related to computer-application development such as: databases, information systems development.</p> <ol style="list-style-type: none"> a3) An understanding of the organization and structure of database systems. <p>A7. Demonstrate essential facts, concepts, principles and theories relating to computing and information and computer applications as appropriate to the program of study</p> <ol style="list-style-type: none"> a4) An Understanding of relational database theories, standard SQL, and database design
B- Intellectual Skills:	<p>B1. Analyze real problems, and appropriate problem solving methods that satisfy commercial or industrial constraints and analyze results</p> <ol style="list-style-type: none"> b1 create in Design a complete database application

	<p>B2, Determine different computer- system application attributes, components, relationships, patterns, architecture, and source of errors. b2 Design data base architecture B4. Apply solutions to a computer science problem, follow-up on solution to verify it, and if necessary restrict the solution methodologies upon the results. b3 Teaching students methods of creating views</p>
<p>C- Professional and Practical Skills:</p>	<p>C4.Outline basic designs for data storage conceptual schemes. c1) Create SQL statements and applying them. C8.Deploy appropriate tools for the construction and documentation of computer-based systems that are used to solve practical problems c2) Creating stored procedures C12.Design, implement, maintain, and manage software systems. Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context. c3) Think in solving a wide range of problems related to the analysis, design and construction of database systems.</p>
<p>D- General and transferable Skills</p>	<p>D6. Demonstrate skills in team work, team management, time management and organizational skills. d1 creating project teamwork</p>

<p>4-Course Content:</p>	<ol style="list-style-type: none"> 1. An overview of database management; what is a database system, operational data, data independence, relational systems and others. 2. An architecture of a database system: The three levels of architecture, the external level, the conceptual level, the internal level, mappings, the database administrator, the database management system. 3. The internal level: Database accesses, page sets and files, indexing. Hashing, pointer chains, comparison techniques. 4. An overview of DB2: Relational databases, the SQL language, major system components. 5. Relational algebra: A syntax for the relational algebra, traditional set operations, special relational operations. 6. Relational calculus: Tuple-oriented relational calculus, relational calculus vs. relational algebra, domain-oriented relational calculus, query-by-examples. 7. Data definition: Base tables, indexing. Data Manipulation: Simple queries, join queries, built-in functions, advanced features, update operations. 8. The system catalog: Querying the catalog, updating the catalog. View: View definition, 9. DML operations and view, logical data independence,
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	<p>advantages of views.</p> <p>10. Embedded SQL: Operations not involving cursors, operations involving cursors, a comprehensive example, dynamic SQL.</p> <p>11. Database environment: Recovery and concurrence security and integrity, database product family.</p>
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5- Teaching and Learning Methods:	<ol style="list-style-type: none"> 1. Lectures 2. Tutorials 3. Class discussions 4. Independent Work 5. Group projects
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6- Teaching and Learning Methods for handicapped students :	-
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7- Student Assessment	
A- Assessment Methods:	<ol style="list-style-type: none"> 1. Assignments and Quizzes 2. Midterm written exam 3. Oral exam 4. Practical exam 5. Final written exam
B- Assessment schedule:	<p>Midterm Examination: Week 7</p> <p>Practical examination: Week 13</p> <p>Oral Examination: Week 14</p> <p>Final Examination: Week 15</p>
C- Weighting of assessments:	<p>Assignments and Quizzes: 0%</p> <p>Mid-Term Examination: 10%</p> <p>Oral Examination: 10%</p> <p>Practical Examination: 15%</p> <p>Final-term Examination: 65%</p>

8- Books and References	
A- Notes:	Handed out to the students part by part.
B- Essential Books (Text Books):	<ul style="list-style-type: none"> ▪ Fundamentals of Database Management Systems by Elmasri and Navathe. 17th ed (2017)
C- Recommended Books:	<ul style="list-style-type: none"> ▪ Ocp Oracle9I Database : Fundamentals 1 Exam Guide by Jason S. Couchman et al - Illustrated Edition (McGraw-Hill Osborne Media. (2002) ▪ Fundamentals of Database Management Systems by Mark L. Gillenson (2012) ▪ Fundamentals of Relational Database Management Systems by S. Sumathi , S. Esakkirajan . (2010)
D- Periodicals, Web sites, ... etc	-

Course Professor: Dr. Haytham Alfeel , Dr.Mohamed Khafagy

Department Head: Dr. Amira Edress

Course Content Intended Learning Outcomes Matrix

Course Title: Database Management Systems

Course Code: INF 372

Course Content	Week	Knowledge & Understanding			Intellectual Skills	Professional & Practical Skills		General & Transferable Skills	
		a1	a2	a3	b1	c1	c2	d1	d2
1. An overview of database management; what is a database system, operational data, data independence, relational systems and others.	1	x					x		
2. An architecture of a database system: The three levels of architecture, the external level, the conceptual level, the internal level, mappings, the database administrator, the database management system.	2		x		x		x	x	
3. The internal level: Database accesses, page sets and files, indexing. Hashing, pointer chains, comparison techniques.	3		x						
4. An overview of DB2: Relational databases, the SQL language, major system components.	4		x	x	x	x		x	x
5. Relational algebra: A syntax for the relational algebra, traditional set operations, special relational operations.	5	x					x		
6. Relational calculus: Tuple-oriented relational calculus, relational calculus vs. relational algebra, domain-oriented relational calculus, query-by-examples.	6	x					x		
7. Data definition: Base tables, indexing. Data Manipulation: Simple queries, join queries, built-in functions, advanced features, update operations.	7	x	x	x	x	x	x		x
8. The system catalog: Querying the catalog, updating the catalog. View: View definition,	8		x				x	x	x
9. DML operations and view, logical data independence, advantages of views.	9			x	x	x		x	x
10. Embedded SQL: Operations not involving cursors, operations involving cursors, a comprehensive example, dynamic SQL.	10			x	x	x		x	x
11. Database environment: Recovery and concurrence security and integrity, database product family.	11	x					x	x	x

Course coordinator: Dr.Haytham Al-feel, Dr. Mohamed khafagy Head of Department: Dr.Amira Edress