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| المملكة العربية السعودية  وزارة التعليم العالي  **جامعة أم القرى**  الكلية الجامعية بالجموم – قسم الحاسب الآلي |  | Kingdom of Saudi Arabia  Ministry of Higher Education  **Umm Al-Qura University**  University College in Al-Jamoum  Computer Dept. |

Course Specification

1. **Course number and name:** (2316412-3) Fundamentals of Databases
2. **Credits and contact hours:** 3 Credits

(Lecture: 3/week – Practical Session: Non)

1. **Instructor’s or course coordinator’s name:** Dr. Youseef Alotaibi
2. **Text books**
3. **Main Text book:** R. Elmasri and S.B. Navathe, Fundamentals of Database Systems, Addison-Wesley, 6th Edition, 2011.
4. **Reference:** T.M. Connolly, C. Begg and A.D. Stroahn, Database Systems: A practical to design, implementation and management, Course Technology, 10th Edition, 2012.
5. **Specific course information**
6. **brief description of the content of the course (Catalog Description):**

Upon the completion of this course, the student will have learned, through appropriate classroom the basic concepts to design, create and implement database systems.

1. **prerequisites or co-requisites:** System Analysis & Design (2316322-3)

File Processing & Organization (2316327-3)

1. **indicate whether a required, elective, or selected elective course in the program:** required
2. **Specific goals for the course**

The student will be able to:

1. Understand database concepts, applications and languages.
2. Understand data models, schemas and instances.
3. Implement the relational database design and data modeling using entity-relationship (ER) model.
4. Understand the concepts of constraints and relational algebra operations.
5. Implement SQL: Data definition, constraints, schema, queries and operations in SQL
6. Produce well-structured database using functional dependencies and normalization.

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| *Course*  *Goals* | *Program Outcomes* | | | | | | | | | | |
| SOa | SOb | SOc | SOd | SOe | SOf | SOg | SOh | SOi | SOj | SOk |
| 1 | **🗸** |  |  |  |  |  |  |  |  |  |  |
| 2 | **🗸** |  |  |  |  |  |  |  |  |  |  |
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| **Relationship of Course Goals to the Program Student Outcomes** | |
| **SOa** | An ability to apply knowledge of computing and mathematics appropriate to the discipline   * *Students apply knowledge of computing and design to a project.* |
| **SOc** | An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs.   * *Students are required design and implement a software project to meet a specification.* |
| **SOd** | An ability to function effectively on teams to accomplish a common goal.   * *Projects are implemented in teams.* |
| **SOf** | An ability to communicate effectively with a range of audiences.   * *The projects require communications, specifications, progress reports, and final report.* |
| **SOi** | An ability to use current techniques, skills, and tools necessary for computing practices.   * *Projects use current computing and modeling/design tools.* |
| **SOk** | An ability to apply design and development principles in the construction of software systems of varying complexity.   * *Developing a project of database systems, applying design and implementation principles in constructing of these systems.* |

1. **Brief list of topics to be covered**

* Introduction
* Database System Concepts and Architecture
* Relational Database Models and Relational Algebra
* SQL
* Data Modeling Using the Entity-Relationship (ER) and Enhanced Entity-Relationship (EER) Models
* Functional Dependencies and Normalization for Relational Databases