Kuwait University
College of Business Administration
Information Systems & Operation Management
(ISOM)

Course Syllabus
Fall 2024/2025
Data and Information Management (ISOM 434)
Dr. Kamel Rouibah

Lecture time Monday and Wednesday ISOM 434-01A (14:00-15:15)

Classroom 1005/D2, 2nd Floor

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Teaching Assistant:
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Course Description

- This course introduces students to basic theoretical and fundamental concepts, methods and techniques essential to developing inventive database systems in a business context. It contributes to strengthen students core skills required to identify organizational information requirements, model the requirements using appropriate conceptual data modeling techniques, convert the conceptual data model into logical data model, verify the structural characteristics of the logical model with proper normalization techniques, and implement and maintain a database using a suitable database management system (DBMS) and existing technologies on the market (MySQL). The course also provides students with fundamental concepts in managing data and information quality, privacy, and security.

Course Learning Objectives (CLO):
The learning outcomes for this course, listed below, relate to the learning goals of the College of Business Administration Undergraduate Program. Upon successful completion of the course, students will get the necessary skills to:

- CLO1: Understand the role of database systems in managing organizational data and information in a changing technological environment; assimilate basic database concepts and terminologies and benefits

- CLO2: Apply appropriate techniques and tools (e.g., interviews, documents analysis, prototyping, etc.) to clearly identify the information requirements of a database for potential users; here emphasize will be on enterprise models and its application.
- CLO3: Apply suitable data conceptual modeling techniques (e.g., Entity-Relationship and OO-Class diagraming) to effectively capture and model the information requirements of a database potential users using appropriate tools (e.g., ERDPLUS, Visible analyst, Glify)
- CLO4: Choose and innovatively use a proper logical data model (e.g., network, relational, OO, etc.) to convert the conceptual model into a logical data model (i.e., logical database design) with more focus on relational database model (normalized models).
- CLO5: Apply a proper technique (e.g., normalization) to verify the integrity and structuredness of the data in the logical database design.
- CLO6: Choose and apply a suitable DBMS and a database programming language (e.g., SQL) to implement the physical model (populate, access, update, query and create reports from the designed database).
- CLO7: Recognize and present fundamental concepts and organizational roles in data and information quality, privacy and security management; database administration and maintenance activities)

CLO Mapping to CBA Skill Based Competency Goals[1]

CLO	Competency Goals of CBA				
	Analytical	**Communication**	**Information Technology**	**Business Ethics**	**General Business Knowledge**
1			Reinforce (R)		Reinforce (R)
2	Apply (A)	Reinforce (R)	Apply (A)		
3	Reinforce (R)		Introduce (I)		
4	Apply (A)		Apply (A)		
5	Apply (A)			Reinforce (R)	
6			Introduce (I), Reinforce (R)		
7		Reinforce (R)		Reinforce (R)	Reinforce (R)

Type of Emphases:

- **(I)ntroduce:** Students will be introduced to the skill and their grasp of it assessed in the course.
- **(A)pply:** The course will not cover the skill. Students should have a high-level grasp of the skill and are required to apply it in the course.
- **(R)einforce:** Students should have an introductory-level grasp of the skill and the course will improve their mastery to a higher level.

Competencies:

Students *will be introduced to*:

- Information and organizational memory,
- Data management issues and the role of data base administrator
- Data base design within the context of information systems design

Students *will understand*:

- Conceptual, logical, and physical data base design
- Data modeling
- Types of data models

[1] CBA Competency Goals can be found at the end of this document

- Data integrity and security in traditional and Internet database applications
- Data warehousing

Students will be able to:

- Identify business entities and attributes in a given situation
- Design conceptual data models
- Normalize data relationships in a conceptual model
- Implement a conceptual data base using a relational DBMS
- Querying and maintaining a data base using SQL.

The needed software resources

Students will use the following software during this course

- CASE tool: ERDplus / LucidChart for Entity Relationship Diagram generation
- MYSQL Workbench for design of relational databases: creation, manipulation of and integration of online databases
- MS business intelligence for data analysis

Course Organization

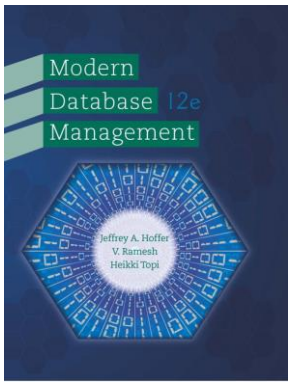
- This is an active learning class. The instructor will not lecture the entire session. Student participation is an essential part of this course. As such, students are expected to come ready to discuss the session's topic and participate in planned activities. Hence, it is in students' best interest to be on time and attentive.
- The course utilizes a combination of lectures based power point, class discussions, problems and cases analysis, and hands-on experience with appropriate SQL tools. Evaluation is based on three form of tasks/examinations: short exams, Lab assignments, a final exam (35%), and, and implementation project and class participation.

Course Content Delivery Strategy

- In person using Power Point for lecturing
- MS teams for Hand notes and communication
- Use of commercial tools: MySQL workbench and ERDplus / LucidChart
- Hands-on experience in the computer lab with TA, and students' presentations.
- Out-of-class activities will include reading assignments, assigned exercises, team projects, and other related course activities. .

Required Material:

- Jeferey A. Hoffer, V. Ramesh and Heikki Topi (2017) Modern database management, *12/eth Edition*, Pearson Editor



12th Version

- External speaker will also be invited to enlighten students from real life experience of companies in Kuwait (KOC/ KNPC)

COMPREHENSIVE DATABASE PROJECTS

To integrate the knowledge in the course, students will be required to complete a relational data base project. You will use MySQL workbench, ERDPlus / Lucidchart and MS Business intelligence for the design of the database project. These tools have been installed in the Lab, and you will use the created account number and password to access all software tools. In order to complete the first comprehensive assignment, you will be required to:

- Define major functions, processes, and activities of the target organization unit and draw a business process /business chart.
- Define the *enterprise model* (draw an entity-relationship diagram –ERD without attributes) for the whole organization; and the select a conceptual model (draw an entity-relationship diagram –ERD with full attributes) to be further selected for a database development
- Generate the logical model with all relations in 3NF;
- Implement a database consisting of these 3NF relations using SQL tool
- Populate the database using the INSERT command, and create views;
- modify an existing record, insert a new record, and delete an existing record;
- Create, query, and delete views on base relations;
- Provide documentation describing the function of different parts of the data base.

Assignments Several will be included

Prerequisites: Programming 1 (ISOM230) and Analysis and Design (ISOM 331)

Course Outline:

Topic	**Reading**
Part I- The context of database management	
Components of database environment & Database Process Basic concepts and definitions • List components of database environment • Describe database system development life cycle • Explain roles of individuals	Chapter [Part 1]
Part II- Database analysis	
Modeling data in the organization • The E-R model: an overview • Modeling the rules of the organization • Modeling entities and attributes • Modeling relationships • E-R modeling example: Pine Valley Furniture Company	Chapter 2
The Enhanced E-R Model • Supertype/subtype relationships • Specialization and generalization techniques • Completeness and disjointness constraints Model Supertype/subtype hierarchies for business situations	Chapter 3
Part III - Database Design	

Logical database design and the relational model • The relational data model • Integrity constraints • Transforming EER diagrams into relations • Introduction to normalization • Merging relations • Normalization example: Pine Valley Furniture Company	Chapter 4
The Database Environment • Define terms and review basic concepts related to database management • Name limitations of conventional file processing • Explain advantages of databases • Identify costs and risks of databases • Identify categories of database applications • Describe evolution of database systems • Describe enterprise Database, ERP and data warehousing • Explain the three-schema architecture for databases	Chapter 1 [Part 2]
Part IV- Implementation	
Introduction to SQL • Origins of the SQL standard • The SQL environment • Defining a database in SQL • Inserting, Updating, and deleting data • Internal schema definition in RDBMs • Processing single tables	Chapter 6
Advanced SQL • Processing multiple tables • Ensuring transaction integrity • Data dictionary facilities • Triggers and routines • Embedded SQL and Dynamic SQL	Chapter 7
Part V – Advanced Database Topics	
Data Warehousing	Chapter 9
Big Data and Analytics [New chapters]	Chapter 11
Data and Database administration • Role of data and database administrator • The open source movement and database management • Managing data security • Database software data security features • Sarbanes-Oxley (SOX) and databases • Database backup and recovery • Controlling concurrent access • Data dictionary and repositories • Overview of tuning the database for performance • Data availability	Chapter 12
Final exam covers (Chaps 1, 2, 3, 4, & 6) Multiple choices, short questions (covering definitions,	

terminology and concepts), problem modeling, critical thinking questions (???/01/2025) from 14:00-16:00

Policies: You are responsible for knowing these policies

- **In-Class Quizzes:** There will be in-class quizzes, one for each chapter. These quizzes are scheduled on the due dates of the respective chapters. No make-up quizzes will be given.
- **Cheating and Plagiarism:** Every student in this course must abide by the Kuwait University Policy on Cheating and Plagiarism (published in the Student Guide, chapter 3, section 2). A copy of the student guide can be accessed online on: http://www.kuniv.edu/cs/groups/ku/documents/ku_content/kuw055940.pdf Plagiarism is strictly prohibited by university policies as well as academic ethics. Violators will be reported to university administration for appropriate actions. Please carefully note all sources and assistance when you turn in your work. Under no circumstances should you take credit for work that is not yours. You should neither receive nor give any unauthorized assistance on any deliverable.
- **Attendance and Participation:** Every student in this course must abide by the Kuwait University Policy on Attendance (published in the Student Guide, chapter 3, section 13). Be on time for the lecture (remember, class starts at 12:00 AM, and not 12:05). At the beginning of each lecture (after 5 minutes of the class start), I will take attendance, anyone coming after that time will be considered as absent, and will result in an automatic deduction of 1 point per extra absence from your overall grade.
- **Absenteeism:** University regulations governing absenteeism are applied to all students. This involves a first warning after 3 hours, a second warning after additional 3 hours absence and a failure notice for any absence beyond the six hours. Absence with a valid excuse will still count as an absence.
- "I didn't know" is not an excuse
- Each student should turn silent his/her mobile at the beginning of class
- Make-up quizzes and exams: No Makeup quizzes or exams will be given, unless you use your Wildcard
- After a grade is posted (quizzes, assignment, midterm), you will have two days to discuss it with your instructor or teaching assistant (TA). After that, the grade is final and released.
- For the final exam, the final grades will be posted after 12 hours
- Negotiation of the final grade is neither accepted nor discussed.
- **Mobiles:** Students should turn silent their mobile at the beginning of each class.
- **Special Needs:** If you are a special needs student (have any disability), please inform your instructor.

Writing Style

- Any information sources (e.g., books, articles, websites, photos, videos, speeches, etc.) you might include in class-related documents and presentations should be referenced using the **APA writing Style**. The APA Manual/Guide can be found at: http://www.bibme.org/apa. Refer to the English Language Unit for help.

Grading:

- The scores in this course will be the weighted average of the following items:

Description	Weight [%]
Short exams (keep the five best ones among seven)	30
Final Exam	25
Lab (Quizzes & Assignments) [under TA control]	20
Project and presentation	15
ETraining [access the following 3 online courses, pass the exam, and provide the e-certificate to your TA. Due date 12.12.2024]	10 [each certificate will worth 3.3

• Data Types and Normalization (Duration 54 minutes) • Data Integrity & Constraints (Duration 1 hour 13 minutes) • Designing & Implementing Views (Duration 55 minutes)	
Attendance	[-0.5 grade for each absenteeism]
Total	100

Important Dates

Item	Date
Last Day to Withdraw	26/10/2024
Last day of classes	23/12/2024
Short exam	After each chapter
Final Exam (Chaps 1, 2, 3, 4, & 6)	06/01/2024 (08:00 – 10:00)

Grade Distribution:

Grade	Range	Points
A	≥ 95	4.00
A-	≥ 90 and < 95	3.67
B+	≥ 87 and < 90	3.33
B	≥ 83 and < 87	3.00
B-	≥ 80 and < 83	2.67
C+	≥ 77 and < 80	3.33
C	≥ 73 and < 77	2.00
C-	≥ 70 and < 73	1.70
D+	≥ 65 and < 70	1.30
D	≥ 60 and < 65	1.00
F	< 60	0.00

Communication Guidelines how to send me messages?

For many of us, e-mail is an important way to communicate. Using e-mails well can help us communicate effectively. Please observe the following guideline when you send me emails (**if you do not comply to the following rules you will get points deduction**)

- Include an informative subject line. For example, if you include in the subject line “Missing Class Today”, I would have known immediately what the message was about.
- Make sure your e-mail is set up to show your name correctly in recipients’ inboxes and not a nickname such as "pinky". If you use a nickname then consider your e-mail as ignored deleted
- Start and end positively. Even if the e-mail is something negative, such as a complain, begin with positive words, such as Dear Dr Kamel and end the same “Thank you”.
- Keep paragraphs relatively short. Long paragraphs tend to be hard to read in e-mail. Therefore break your message into short paragraphs.
- Select one language when sending me e-mails and write me either in English or in Arabic. However don't mix the two. It is too bad for you and your image.
- Ovoid use of "chat" language such as plz for "please", 2 for "two", etc.
- Proofread your e-mail before sending it to me.