QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Cyber Security Department

Study plan No.	**2021/2022**		**University Specialization**		**Cybersecurity**
Course No.	**0125241**		**Course name**		**Database and Security**
Credit Hours	**3**		**Prerequisite Co-requisite**		**Object-Oriented Programming**
Course type	☐ MANDATORY UNIVERSITY REQUIREMENT	☐ UNIVERSITY ELECTIVE REQUIREMENTS	☐ FACULTY MANDATORY REQUIREMENT	☐ Support course family requirements	☐ ✓ **Mandatory requirements** ☐ Elective requirements
Teaching style	☐ **Full online learning**		☐ Blended learning		☐ ✓ Traditional learning
Teaching model	☐ 2Synchronous: 1asynchronous		☐ 2 face to face : 1synchronous		☐ ✓ **3 Traditional**

Faculty member and study divisions information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Division number	**Time**	**Place**	**Number of students**	**Teaching style**	**Approved model**

Brief description

Database Management Systems (DBMS) describes a standard set of models, design paradigms and a Structured Query Language (SQL). In this background, the course would examine data structures, file organizations, concepts and principles of DBMS's, data analysis, database design, data modelling, database management, data & query optimization, and database implementation. More specifically, the course introduces relational data models; entity-relationship modelling, SQL, data normalization, and database design. It would also introduce query coding practices using MySQL (or any other open system) through various assignments. Design of simple multi-tier client/server architectures based and Web-based database applications will also be introduced. This course also introduces the principles, practices, procedures, and methodologies to ensure the security of data at rest within databases. This course and it appraises the convergence between database security and associated threat vectors/attack methods

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	DataBase System Concepts, 7th edition, McGraw Hill Book Company, 2020, by Abraham Silberschatz, Henry F.Korth and S.Sudarshan.
Supportive learning resources (Books, databases, periodicals, software, applications, others)	**1-** Database Design and Relational Theory: Normal Forms and All That Jazz, 2st edition, O'Reilly Media, Inc. 2019, by C.J Date. 2-Database Systems: Design, Implementation, and Management", 13th Edition. 2019, by Carlos Coronel , Steven Morris

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	3- Fundamentals of Database Systems, 7th Edition, Pearson,2016, by Ramez Elmasri , Shamkant B. Navathe			
Supporting websites				
The physical environment for teaching	☐ ✓**Class room**	☐ ✓labs	☐ ✓**Virtual educational platform**	☐ Others
Necessary equipment and software	Microsoft SQL Server. MySQL			
Supporting people with special needs				
For technical support	**E-learning and Open Educational Center. Computer Center**			

Course learning outcomes (S= *Skills, C= Competences K= Knowledge,)*

No.	Course learning outcomes	The associated program learning output code
	Knowledge	
K1	Understanding database concepts, database management systems, data modeling and database security	**MK1**
K2	Understanding data normalization and relational model	**MK2**
K3	Understanding SQL	**MK4**
K4		
	Skills	
S1	Analysis and Design a database system.	**MS2**
S2	Ensure database security	**MS4**
S3		
S4		
	Competences	
C1	Manage tasks and work in team	**MC1**
C2		
C3		
C4		

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
First exam	0	0	**%20**	0
Second / midterm exam	%30	%30	**%20**	30%
Participation / practical applications	0	0	**10**	30%
Asynchronous	%30	%30	**0**	0

interactive activities				
final exam	%40	%40	**%50**	40%

Note: Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.

Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1	Introduction to Database systems	lecture	Chapter1 (1-16)
2	Introduction to Database systems (cont)	lecture	Chapter1 (17-33)
3	Introduction to the Relational model	lecture	Chapter2 (37-46)
4	Relational Operations	lecture	Chapter2 (47-58)
5	Introduction to SQL	learning through projects	Chapter3(65-85)
6	Introduction to SQL (cont)	learning through projects	Chapter3(86-108)
7	Intermediate SQL	learning through projects	Chapter4(125-173)
8	Database Design Using the E-R model.	Lecture	Chapter6(241-256)
9	Database Design Using the E-R model (Cont)	Lecture	Chapter6(261-279)
10	Database Design Using the E-R model (Cont)	learning through problem solving	An enterprise
11	Relational Database Design	lecture	Chapter7(303-320)
12	Relational Database Design (Cont)	lecture	Chapter7(321-344)
13	Database Security	lecture	Chapter(30) Ref (1)
14	Database Security(Cont)	lecture	Chapter(30) Ref (1)
15	Project Discussion	learning through projects	
16	Final Exam		

*** Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.**
**** Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.**

Schedule of asynchronous interactive activities (in the case of e-learning and blended learning)

Week	Task / activity	Reference	Expected results
1			
2			
3			
4			
5			
6			
7			
8			