



Al-AI Bayt University
Prince Hussein bin Abdullah Faculty of Information Technology
Computer Science

3 ساعات معتمدة
المتطلب السابق: 0901331 أو ما
يعادلها

نظم قواعد بيانات متقدمة 0901732
Advanced Database Systems

نماذج قواعد البيانات. لغات الاستفسار. تصميم نسق قواعد البيانات. ألتخزين وطرق الوصول للبيانات ومعالجة الاستفسارات. إدارة التعاملات والتحكم بالتشارك. أمنية قواعد البيانات. قواعد البيانات الموزعة. مخازن البيانات واستخراج البيانات.

Course Syllabus

Course Title	Advanced Database Systems	Course Code	901732
Coordinator	Khaled Batiha	Prerequisite(s)	901331
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Course Is	Elected		

Course Description:

Data modeling. Query Language. Database Design. Query Processing. Transaction Processing and Concurrency Control Techniques. Database security. Distributed Database. Data Mining.

Course Learning Outcomes (CLO):

- 1-In this course, student will develop a deeper understanding of database technology. Such depth of knowledge will help in the administration, and in the construction of efficient applications based on the relational model. The various architectural aspects of a database management system will be covered. Techniques for storing, querying and transaction processing will form the core of this module.
- 2- Students will be expected to understand how the transaction management system works comparing single-user systems with multi-user systems, and understanding the various failures that may occur during transaction execution. Techniques for concurrency control and recovery from system failure will be analyzed.
- 3- Students should learn In general, a variety of further aspects of database technology security, distributed databases, Statistical database, data encryption, and so forth.
- 4- Student will be expected to demonstrate an understanding the role of data warehouse in decision-making and the benefits of data mining.

Tentative Topics Covered	
Week No	Topic
1	Introduction to Database System. Database concepts and architecture, Data modeling using E-R models
2	Relational model: concepts, constraints, Query Language.
3	Database Design, Functional dependencies and Normalization for relational Databases
4	Object and Object-Relational Databases
5	Strategies for Query Processing
6	Query Optimization
7	introduction to Transaction Processing Concepts and Theory
8	Concurrency Control Techniques
9	Database Recovery Techniques
10	Distributed Database Concepts, MID EXAM
11	NOSQL Databases and Big Data Storage Systems
12	Enhanced Data Models: Introduction to Active, Temporal, Spatial, Multimedia, and Deductive Databases
13	Introduction to Information Retrieval and Web Search
14	Data Mining Concepts
15	Database Security
16	Final exam

Textbook(s)			
Title	FUNDAMENTALS OF Database Systems		
Author(s)	Ramez Elmasri and Shamkant B. Navathe	Publisher	Pearson
Edition	SEVENTH EDITION	Year	2017

References	
Book Titles (Author(s), Title, Edition, Publisher, Year)	Website URL (if available)
1- Silberschatz, A., Korth, H. F. and Sudarshan, S. "Database System Concepts", 5th. Ed., McGraw-Hill Higher Education, 2006.	
2- Coronel, R., "Database Systems: Design, Implementation	

and Management” Course Technology – Thomson Learning, 2002.

3- Date, C.J., 'An Introduction to Database Systems', 7th . Ed., Addison-Wesley, 2000.

4- Lecturers Notes and Handouts

Evaluation

Assessment Tool	Marks
-Mid-Term Exam	30
- Class Activities & Assignment	30
- Final Examination	40