

**1. Course Number and Course Title:**

COE 632 – Advance Database Systems

**2. Credits Hours:**

3-0-3

**3. Prerequisites and/or Co-Requisites:**

Admission to MSCoE program

**4. Name and Contact Information of Instructor:**

Dr. Ghassan Z. Qadah  
Computer Science & Engineering  
Office: EB1 – 251, Extension: 2913  
Email: gqadah@aus.edu  
Phone: 06 515-2913

**Lecture:** Tuesday, 5:00 – 7:50 pm (EB1-102)

**Office Hours:** posted on office door and iLearn (MW 1:00 – 2:00 pm, Tuesday 4:00 – 4:45 pm or by appointment)

**5. Course Description (Catalog Description):**

Covers the following advanced topics in database systems: file structures, indexing techniques, query processing and optimization, concurrency control and backup and recovery, Extensible Markup Language (XML) databases and languages, and mobile databases and data mining.

**6. Textbook and other Supplemental Material:**

**Primary:** Ramakrishnan, R. and Gehrke, J., Database Management Systems, 3<sup>rd</sup> edition, McGraw Hill, 2003.

**Supplementary:**

- Elmasri R. and Navathe S., Database Systems, 6<sup>th</sup> ed., Pearson, 2014.
- Silberschatz A. , Korth K. and Sudarshan S., Database System Concepts, 6<sup>th</sup> ed. 2011, McGraw Hill.
- Selected readings

**7. Learning Outcomes:**

This course requires the student to demonstrate the ability to:

1. Evaluate different files, indexing structures and storage schemes in support of modern database systems
2. Quantitatively estimate the performance of alternative algorithmic implementations of primitive database operations
3. Apply different optimization techniques to speed up query processing against large databases
4. Use different concurrency control schemes to insure correct access to databases

5. Design appropriate backup and recovery scheme that insures database integrity.
6. Use XML data model and languages in modern databases.
7. Apply data mining concepts to generate abstract rules from large databases.

**8. Teaching and Learning Methodologies:**

**9. Course Topics and Schedule:**

Topic	Weeks
File and indexing structures	2
Query Processing and optimization	3
Concurrency Control	2
Backup & Recovery Techniques	2
XML databases	2
Data Mining Concepts	2
Recent advances in database systems	1
Evaluation and Assessment	2
<b>Total:</b>	<b>16</b>

**10. Schedule of Laboratory and other Non-Lecture Sessions:**

Not Applicable

**11. Student Evaluation:**

Assessment	Weight
Homework Assignments	5%
Presentations	10%
Term Paper	20%
Midterm Exam	30%
Final Exam	35%

**12. Contribution of Course to Program Outcomes**

This course contributes to the accomplishment of the following program outcomes:

Program Outcome	Extent of Contribution
Perform research emphasizing creativity, independent learning and scientific methods in a chosen area of computer engineering.	◐
Apply advanced mathematics and engineering knowledge in identifying, formulating and solving engineering problems.	◐
Select and use techniques, skills and modern tools necessary for research or professional practice.	◐
Communicate effectively	●
Recognize the need for, and engage in, lifelong learning	○
Attend to professional and ethical responsibilities	○

Extent of contribution: ● high; ◐ medium; ○ low