



# Course Specification

— (Bachelor)

Course Title: **Database 2**

Course Code: **CS1761**

Program: **Optional specialization group A**

Department: **Computer Science and Engineering**

College: **Computer Science and Information Technology**

Institution: **Albaha University**

Version: **1**

Last Revision Date: **8-10-2023**



## Table of Contents

<b>A. General information about the course:</b> .....	3
<b>B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods</b> .....	4
<b>C. Course Content</b> .....	5
<b>D. Students Assessment Activities</b> .....	6
<b>E. Learning Resources and Facilities</b> .....	6
<b>F. Assessment of Course Quality</b> .....	7
<b>G. Specification Approval</b> .....	8



## A. General information about the course:

### 1. Course Identification

1. Credit hours: ( 3 )

#### 2. Course type

A.  University  College  Department  Track  Others  
 B.  Required  Elective

3. Level/year at which this course is offered: (10<sup>th</sup> Level/ 4<sup>th</sup> year)

#### 4. Course general Description:

The fundamental concepts and principles of database management systems (DBMS) are introduced in this course. Basic terminology and ideas of relational databases and database management systems are the main topics where students gain knowledge about triggers and transactions in PL/SQL and SQL.

In a second part, the concepts and fundamental principles of NoSQL databases will be explained. including the 4 main, most well-known database types: Key-Value Stores, Columnar Databases, Document Stores, Graph Databases.

#### 5. Pre-requirements for this course (if any):

Database1 (CS1007)

#### 6. Pre-requirements for this course (if any):

#### 7. Course Main Objective(s):

- To manipulate complex object.
- To develop relevant PL/SQL programming abilities.
- To demonstrate proficiency design of database project.
- To understand the principals of Nosql database and try some examples:
- Columnar databases (e.g., HBase and Vertica)
- Key-Value stores (e.g., Amazon DynamoDB and Apache Cassandra)
- Documents stores (e.g., MongoDB)
- Graph databases (e.g., Neo4j and VertexDB)



## 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	22	50%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>Traditional classroom</li> <li>E-learning</li> </ul>		
4	Distance learning	22	50%

## 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	22
2.	Laboratory/Studio	22
3.	Field	
4.	Tutorial	
5.	Others (specify)	
<b>Total</b>		

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Identify complex objects (views, sequence, index and synonyms)	K1	Lectures	<ul style="list-style-type: none"> <li>Midterm</li> <li>Final Exam</li> </ul>
1.2	Demonstrate the main concepts of PL/SQL program	K1	Lectures	<ul style="list-style-type: none"> <li>Midterm</li> <li>Final Exam</li> </ul>
...				





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
<b>2.0</b>	<b>Skills</b>			
2.1	Manipulate complex objects like Views, sequence, index and synonyms	S1	<ul style="list-style-type: none"> <li>Lectures</li> <li>Assignment</li> <li>Lab</li> </ul>	<ul style="list-style-type: none"> <li>Homework</li> <li>Lab Work</li> </ul>
2.2	Use PL/SQL programming with DBMS	S2	<ul style="list-style-type: none"> <li>Lectures</li> <li>Assignment</li> <li>Lab</li> </ul>	<ul style="list-style-type: none"> <li>Midterm</li> <li>Homework</li> <li>Lab Work</li> <li>Project</li> <li>Final Exam</li> </ul>
2.3	Execute functions, procedures, packages, exceptions and triggers	S3	<ul style="list-style-type: none"> <li>Lectures</li> <li>Assignment</li> <li>Lab</li> </ul>	<ul style="list-style-type: none"> <li>Midterm</li> <li>Homework</li> <li>Lab Work</li> <li>Project</li> <li>Final Exam</li> </ul>
2.4	Execute the different types of Nosql databases	S3	<ul style="list-style-type: none"> <li>Lectures</li> <li>Assignment</li> <li>Lab</li> </ul>	<ul style="list-style-type: none"> <li>Midterm</li> <li>Homework</li> <li>Lab Work</li> <li>Project</li> <li>Final Exam</li> </ul>
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Work both independently and collaboratively	V1	Course Project	Project Presentation

### C. Course Content

No	List of Topics	Contact Hours
1.	Complex objects ( Views, sequence, index and synonyms)	2
2.	PL/SQL Block Structure and Declaration of Variables	2
3.	Program Structures to Control Execution Flow	2
4.	Cursors and Parameters	2
5.	Functions , procedures and packages	2
6.	Exceptions	2
7.	Trigger	3
8.	NoSql database	3
9.	- Columnar databases - Key-Value stores	2
10.	- Documents stores - Graph databases	2
<b>Total</b>		<b>22</b>





No	List of Topics (Lab)	Contact Hours
1.	Create Views, sequence, index and synonyms	2
2.	Constants and Literals in PL/SQL, Program Segment PL/SQL General Concept, Variables	2
3.	Condition and loops in PL/SQL	2
4.	Practicing cursor	3
5.	Managing procedures, functions and Packages	3
6.	Exception Handling	2
7.	Triggers	3
8.	- Columnar databases - Key-Value stores	3
9.	- Documents stores - Graph databases	2
<b>Total</b>		<b>22</b>

#### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework	Every two weeks	10%
2.	Lab work	11	10%
3.	Midterm Exam	6	20%
4.	Project	10	20%
5.	Final Exam	12	40%

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

#### E. Learning Resources and Facilities

##### 1. References and Learning Resources

<b>Essential References</b>	<ol style="list-style-type: none"> <li>1. "Database System Concepts," (6th Ed.) by Avi Silberschatz, Henry Korth, and S. Sudarshan</li> <li>2. Expert Oracle PL/SQL By (author) Ron Hardman , By (author) Michael Mclaughlin. By ORACLE Corporation</li> <li>3- "SQL &amp; NoSQL Databases", Models, Languages, Consistency Options and Architectures for Big Data Management , Andreas Meier , Michael Kaufmann, 2019.</li> </ol>
<b>Supportive References</b>	Computer Science Curriculum 2013 – <a href="http://cs2013.org">http://cs2013.org</a> ACM (Association for Computer Machinery) Curricula Recommendations - <a href="http://www.acm.org/education/curricularecommendations">http://www.acm.org/education/curricularecommendations</a>
<b>Electronic Materials</b>	Access to the Saudi Digital Library (SDL).





	<ul style="list-style-type: none"> <li>• Using the learning management system of the university – Rafid System (<a href="https://lms.bu.edu.sa/">https://lms.bu.edu.sa/</a>).</li> <li>• ACM (Association for Computer Machinery) web site - <a href="http://www.acm.org/">http://www.acm.org/</a></li> <li>• ACM SIGMOD (Special Interest Group on Management of Data) - <a href="http://www.sigmod.org/">http://www.sigmod.org/</a></li> <li>• IEEE Computer Society web site - <a href="http://www.computer.org/portal/web/guest/home">http://www.computer.org/portal/web/guest/home</a></li> </ul>
<b>Other Learning Materials</b>	Open access course material online

## 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom - Laboratory
<b>Technology equipment</b> (projector, smart board, software)	Data show – Smart Board
<b>Other equipment</b> (depending on the nature of the specialty)	My SQL workshop Programming and PL/SQL Oracle 12

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	<ul style="list-style-type: none"> <li>•Students</li> <li>•Faculty</li> <li>•Peer Reviewers</li> <li>• Program Leader</li> <li>•Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>•Surveys (indirect).</li> <li>•Direct feedback from students.</li> <li>•Course evaluation by Peer Reviewers (indirect).</li> <li>•Class visit by Program Leader (indirect)</li> <li>Comprehensive Course report (where we can find information about teaching difficulties and action plan, ...)</li> </ul>
Effectiveness of Students assessment	<ul style="list-style-type: none"> <li>•Faculty</li> <li>•Peer Reviewers</li> </ul>	<ul style="list-style-type: none"> <li>•Surveys (indirect)</li> </ul>
Quality of learning resources	<ul style="list-style-type: none"> <li>•Students</li> <li>•Faculty</li> <li>•Peer Reviewers</li> <li>•Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>•Surveys (indirect)</li> <li>•Course evaluation by Peer Reviewers (indirect).</li> <li>Comprehensive Course report (where we can find information about difficulties and challenges)</li> </ul>



Assessment Areas/Issues	Assessor	Assessment Methods
		about learning resources as well as consequences and action plan, ...)
The extent to which CLOs have been achieved	<ul style="list-style-type: none"> <li>•Faculty</li> <li>•Program Leader</li> <li>•Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>•Student Results (direct)</li> <li>•Comprehensive Course report (where we can find the CLO assessment results)</li> </ul>
Other		

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

### G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	
<b>REFERENCE NO.</b>	
<b>DATE</b>	

