

# Course Specifications

<b>Course Title:</b>	Advanced Databases
<b>Course Code:</b>	<b>343CIS-3</b>
<b>Program:</b>	<b>Information Systems</b>
<b>Department:</b>	<b>Information Systems</b>
<b>College:</b>	College of Computer Science and Information Systems
<b>Institution:</b>	Najran University



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## A. Course Identification

<b>1. Credit hours:</b>	<b>3 (2,2,1)</b>
<b>2. Course type</b>	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> Year 3/ Level 6	
<b>4. Pre-requisites for this course</b> (if any): 342CIS-3 Fundamental of Databases	
<b>5. Co-requisites for this course</b> (if any):	

## 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	75	100%
2	Blended		
3	E-learning		
4	Correspondence		
5	Other		

## 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	15
4	Others (specify)	
	<b>Total</b>	75
<b>Other Learning Hours*</b>		
1	Study	30
2	Assignments	10
3	Library	
4	Projects/Research Essays/Theses	
5	Others (Presentations)	5
	<b>Total</b>	45

\* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The course covers the topics including: Storing data: disks and files which include the memory hierarchy, disk space management, buffer management, file and indexes, page formats and record formats; file organization and indexes which introduce cost modeling, comparison of



three file organizations, overview of indexes and properties of indexes. Three-structured indexing, hash based indexing and database design security; transaction management which introduce to transactions and schedules, concurrent execution of transaction, lock-based concurrency control and crash recovery. Crash recovery includes introduction to ARIES, recovery from a system crash and media recovery. It also covers advanced topics such as : Data Mining , Data Warehousing and XML. Students will be trained on some software tools such as: Oracle, Sybase, DB2, and Informix.

## 2. Course Main Objective

To introduce the Programming in large-scale relational database environment, design and implement applications. Another aspect has ability to apply database administrator, performance issues, Determine the benefits of indexing, integrity constraints and triggers, Apply Database Security, backups issues to recovery, Finally Analyze the Categories of database failure.

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
<b>1</b>	<b>Knowledge:</b>	
1.1	Identify the client/server architecture of the database and the architecture of the DBMS	K1, K2, K3
1.2	Explain the concepts of database files and indexing, and integrity constraints	K1, K2
1.3	Demonstrate and understand of issues in Concurrency Control Techniques	K3
<b>2</b>	<b>Skills :</b>	
2.1	Implement database transactions	S2, S4
2.2	Perform database backup, recovery and Security	S1,S4
2.3	Discuss the basics of data warehousing , data mining and XML	S1, S4
<b>3</b>	<b>Competence:</b>	
3.1	Solve effectively in teams and practice communication skills in writing and presenting the course project.	C1, C2

## C. Course Content

No	List of Topics	Contact Hours
1	Database Client-Server Architecture.	8
2	Database Transactions/ Conditional Statements, Iterative Control, Trigger , Procedures , Function, Forms and reports	14



3	Managing Database instance , File Storage Structures, DB creation and indexing	8
4	Concurrency Control Techniques	10
5	Database Recovery Techniques	5
6	Database Security	5
7	Data Mining Concepts	5
8	Overview of Data warehousing and OLAP	5
9	XML: Extensible Markup Language	5
10	Review	5
<b>Total</b>		<b>75</b>

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge</b>		
1.1	Identify the client/server architecture of the database and the architecture of the DBMS	Student be able to understand architecture of the DBMS Class lectures and Labs	Tests, Quizzes, Assignments and Labs
1.2	Explain the concepts of database files and indexing, and integrity constraints	Student be able to understand concepts of database files, indexing, and integrity constraints Class lectures and Labs	Tests, Quizzes, Assignments and Labs
1.3	Demonstrate and understand of issues in Concurrency Control Techniques	Student be able to understand concepts of data Concurrency Control Class lectures	Tests, Quizzes, and Assignments
<b>2.0</b>	<b>Skills</b>		
2.1	Implement database transactions	Student be able to Learn and apply database transactions Class lectures and Labs	Tests, Quizzes, Assignments and Labs
2.2	Apply database backup and recovery	Student be able to learn and apply database backup	Tests,



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		and recovery Class lectures and Labs	Quizzes, Assignments and Labs
2.3	Perform Database Security	Student be able to learn and apply Database Security Class lectures and Labs	Tests, Quizzes, Assignments and Labs
2.4	Discuss the basics of data warehousing and data mining and XML	Class lectures	Tests, Quizzes, and Assignments
<b>3.0</b>	<b>Competence</b>		
3.1	Solve effectively in teams and practice communication skills in writing and presenting the course project.	Discussion Class lectures and labs	Oral Presentation Weekly Task Final Report and Documentation Discussion

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Lab activities	1-to-13	10
2	Assignment 1	4	1
3	Quiz 1	5	4
4	First Midterm Exam	7	15
5	Assignment 2	8	1
6	Second Midterm Exam	9	15
7	Tutorial	11	2
8	Final Lab	15	12
9	Final Test	16	40

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

## E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

10 Office hours

4 academic hours per week



## F. Learning Resources and Facilities

### 1. Learning Resources

#### Required Textbooks

Elmasri, Ramez and Navathe, Shamkant. Fundamentals of Database Systems. Boston: 7th Edition, 2016

#### Essential References Materials

1. Benjamin Rosenzwing, Elena Silvestrova, Oracle PL/SQL by Example, Printice Hall, Latest Edition.
2. John Adoloh Palinski, Oracle SQL and PL/SQL Handbook. Addison Wesley, Latest Edition.

#### Electronic Materials

www.oracle.com

#### Other Learning Materials

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Room B-046 Laboratory B-107L
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	data show multimedia system , PCs Headset and Microphone system.
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Focus group discussion with small groups of students.	instructor	Direct
Extent of achievement of course learning outcomes	instructor	Direct
The quality of learning resources	Program Leaders	direct

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

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

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

<b>Council / Committee</b>	Department Council
<b>Reference No.</b>	Session No. 10 (441-38-43300)
<b>Date</b>	17/02/2020

