



جمهورية مصر العربية

وزارة التعليم العالي والبحث العلمي

Ministry of Higher Education and Scientific Research



المعهد العالي للحاسبات وتكنولوجيا المعلومات  
مدينة الشروق - القاهرة  
شعبة علوم الحاسب

## Course specification

**Course Code:** CS 470

**Course Title:** Data Warehouse

**Academic Year:** 2023/2024

**Course specification**  
**(CS 470 - Data Warehouse)**

**Course Outline**

<b>Faculty</b> :	<i>HICIT- (Higher Institute for Computers &amp; Information Technology-El Shorouk Academy)</i>		
<b>Programme(s) on which the course is given:</b>	Undergraduate program in Computer Science		
<b>Major or minor element of programme:</b>	Selective		
<b>Department offering the program</b>	Department of Computer Science		
<b>Department offering the course:</b>	Department of Computer Science		
<b>Level</b>	fourth Level		
<b>Date of specification approval</b>	--/--/2023		

**Basic Information**

<b>Code:</b>	CS 470	<b>Title:</b>	Data Warehouse
<b>Prerequisites:</b>	CS 323 Intro to databases		
<b>Weekly Hours:</b>			
<b>Lecture:</b> 2	<b>Practical:</b> 2	<b>Total:</b> 3 credit hours	

**Professional Information**

**Course Aims:**

*The aim of this course is to introduce the students to data warehousing concepts and its wide range of applications. In addition, students will learn the steps to build a data warehouse starting from designing a multidimensional schema to model their data warehouse, until using analysis and report tools to get useful information needed for decision making. The students will also study data cubes and how they are used to visualize the different measures. Finally, the DX query language is presented in the practical sessions along with other tools so that the students by the end of the course are ready to build a fully functional data warehousing system.*

**Program ILOs Covered by Course**

Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
A1 , A3, A5, A9 , A12	B1, B3, B9, B10,B20	C1, C5, C7	D1, D2, D8, D9

### Intended learning outcomes of course (ILOs)

#### **a. Knowledge and Under-Standing:**

- a.1 Comprehend the role of data warehouses in decision making .
- a.2 Understand how to incorporate managerial requirements into the data warehouse dimensional model .
- a.3 Comprehend the life cycle of designing a data warehouse .
- a.4 Understand the fundamental concepts and techniques used in designing data warehouses .
- a.5 Understand how to interpret data quantitatively and predict future trends through mining.

#### **b. Intellectual Skills:**

- b.1 Perform Requirement analysis to select either warehouses and traditional database systems.
- b.2 Analyze data quantitatively for efficient decision making.
- b.3 Predict future trends and patterns.
- b.4 Propose solutions for the different problems that they can face during their design and implementation.

#### **c. Professional and practical skills**

- c.1 Manipulate data integrated from heterogeneous sources.
- c.2 Demonstrate ability to use data warehouses in different decision-making problems.
- c.3 Employ data warehousing design tools and software.
- c.4 Use analytical tools to efficiently analyze both historical and current data.

#### **d. General and transferable skills**

- d.1 Infer vague requirements and transform them into a logical model.
- d.2 Design a data warehouse that satisfies managerial needs and uses available resources.
- d.3 Defend the need for data warehouses.
- d.4 Present his/her system in a professional way.
- d.5 Work in a team.

<b>Contents</b>			
<b>Topic</b>	<b>Contact Hours</b>		
	<b>Hours</b>	<b>Lec.</b>	<b>practical</b>
Introduction to Data warehousing	4	2	2
Data warehouse architecture	4	2	2
Data Warehouse Design	4	2	2
Case Study: Data Warehouse for a Grocery Store	4	2	2
Advanced dimensional modeling concepts	8	4	4
Multi-dimensional databases (MDDBs)	4	2	2
Performance enhancing techniques	4	2	2
Data Warehouse Project Management	8	4	4
Metadata	4	2	2
Advanced design issues	4	2	2
Reporting	4	2	2
Business intelligence	4	2	2

<b>Teaching and learning methods</b>	
<b>Teaching and learning methods</b>	<b>Used</b>
Lectures	√
Tutorial Exercises	√
Discussions.	√

<b>Student assessment methods &amp; Schedule</b>		
<b>Methods</b>	<b>Used</b>	<b>Week#</b>
Midterm Exam	√	<b>8</b>
Final Exam	√	<b>16</b>
Course Work & Quizzes	√	<b>2-14</b>

<b>Assessment Weight</b>	
<b>Assessment</b>	<b>Weight %</b>
Mid Term Exam	20%
Final Exam	60%
Course Work & Quizzes	20%
Total	100

## Course Work & Quizzes

Short Exams, Assignments, Research, Reports, Presentations
Class/Project discussion

## List of references

<b>Essential books (textbooks)</b>	<ol style="list-style-type: none"> <li>1. Kimball R, et al. (2008). The Data Warehouse Toolkit: Practical Techniques for Building Data Warehousing and Business Intelligence Systems. Second Edition, John Wiley.</li> <li>2. Reema Thareja, 2009. Data warehousing. Oxford University Press, USA. ISBN:0195699610.</li> <li>3. Building the data warehouse, Willian H. Inmon, 4th edition 2005</li> </ol>
<b>Course notes</b>	E-Learning Portal
<b>Recommended books</b>	
<b>Periodicals, website</b>	
<b>Videos link</b>	

## Required Facilities

<b>Tools &amp; SW (Technology facilities):</b>	<ul style="list-style-type: none"> <li>- Microsoft TEAMS to create virtual classrooms for lectures, discussions for project.</li> <li>- Academy Portal (MOODLE) to make electronic quizzes and electronic midterm exam.</li> <li>- Academy Portal (MOODLE) to upload project deliverable and assignment.</li> <li>- Academy portal (MOODLE) to upload electronic material.</li> </ul>	
<b>Teaching facilities:</b>	Whiteboard	√
	Computer Lab	√
	Data show	√
	E-Learning	√
	Videos	√
	Website	√

### Course Content/ILO Matrix

Course Contents	Knowledge & understanding					Intellectual skills				Professional and practical skills				General				
	a1	a2	a3	a4	a5	b1	b2	b3	b4	c1	c2	c3	c4	d1	d2	d3	d4	d5
Introduction to Data warehousing	x								x									
Data warehouse architecture			x															
Data Warehouse Design	x																	
Case Study: Data Warehouse for a Grocery Store		x		x		x	x	x	x			x						
Advanced dimensional modeling concepts		x	x	x						x	x							
Multi-dimensional databases (MDDBs)																		
Performance enhancing techniques											x							
Data Warehouse Project Management					x													
Metadata																		
Advanced design issues																		
Reporting																		
Business intelligence																		

### Learning Method /ILOs Matrix

Learning Methods	Knowledge and understanding					Intellectual skills				Professional and practical skills				General				
	a1	a2	a3	a4	a5	b1	b2	b3	b4	c1	c2	c3	c4	d1	d2	d3	d4	d5
Lectures	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Tutorial Exercises									x	x	x	x	x	x	x			
Discussions.									x	x	x	x	x	x	x	x	x	x

### Assessment Methods /ILOs Matrix

Assessment Methods	Knowledge & understanding					Intellectual skills				Professional & practical skills				General				
	a1	a2	a3	a4	a5	b1	b2	b3	b4	c1	c2	c3	c4	d1	d2	d3	d4	d5
Mid Term Exam	x	x	x	x	x	x	x	x	x	x	x							
Final Exam	x	x	x	x	x	x	x	x	x	x	x							
Course Work & Quizzes	x	x	x	x	x	x	x	x	x	x	x	x	x	x				

Prog ILOs	Course ILOs	Knowledge & understanding										Professional and practical skills			General				
		A1	A3	A5	A7	A9	A12	B1	B3	B9	B10	B20	C1	C5	C7	D1	D2	D8	D9
Knowledge and Understanding	a1		√		√														
	a2			√		√	√												
	a3	√			√		√												
	a4			√		√													
	a5			√															
Intellectual skills	b1						√	√	√										
	b2									√		√							
	b3							√	√			√	√						
	b4										√								
Professional and practical skills	c1												√	√	√				
	c2												√	√	√				
	c3												√						
	c4												√	√	√				
General skills	d1															√	√		
	d2															√			
	d3																√	√	
	d4															√			
	d5															√			√

**Course Coordinator** : Dr. salah Elewa ( )

**Head of Department** : prof.Dr. Ahmed El-Abbassy ( )

**Date**: --/--/2023