List of Course Learning Outcomes (Data Bases and Data Warehouses (DBDW))

Code of Learning Outcomes	Course Learning Outcomes
DBDW1	to understand the distributed database concepts, different database models, and database management systems
DBDW2	to understand general issues of Data Warehouse and Data Mining
DBDW3	to understand data modelling and database development process
DBDW4	to be able to tune and optimize some database applications
DBDW5	to be able toanalyse of the different architectures and mining techniques
DBDW6	to be able to explain the stages of ETL process
DBDW7	to be able to discuss/explain some database security issues
DBDW8	to be able to apply Data Mining and Warehouse techniques through the use of different tools
PS2	to be able to apply the acquired knowledge creatively
PS4	to be able to work efficiently in a group, manage the team, and act collectively

Correlation Matrix of Programme Learning Outcomes and DBDW Course Learning Outcomes

Programme Learning Outcomes	Course Learning Outcomes	Code
1	2	3
to understand essential concepts, facts, principles, and theories of information system (P1)	to understand thedistributed database concepts, different database models, and database management systems	DBDW1
	to understand general issues of Data Warehouse and Data Mining	DBDW2
to understand the diversity and state-of-the-art in area of information system (P2)	to understand the distributed database concepts, different database models, and database management systems	DBDW1
to understand problems of users of information systems, to be able to identify, analyse and specify user requirements (P5)	to understand the distributed database concepts, different database models, and database management systems	DBDW1
	to understand data modelling and database development process	DBDW3
to be able to identify, analyse, and understand unorthodox problems of information systems development (P7)	to understand data modelling and database development process	DBDW3
	to be able to analyse of the different architectures and mining techniques	DBDW5
to be able to apply methods of knowledge, metadata analysis and information safety engineering (P9)	to be able to explain the stages and process different data mining techniques	DBDW6
to be able to identify, find and evaluate information relevant to information systems by using data bases and other sources of information (P10)	to be able to apply Data Mining and Warehouse techniques through the use of different tools	DBDW8
	to be able to carefully explain methods, models and techniques in Big Data	DBDW7
1	2	3
to be able to apply various computerized tools for model driven information systems analysis and design (P11)	to be able to apply Data Mining and Warehouse techniques through the use of different tools	DBDW8
	to be able to tune and optimize some database applications	DBDW4
to be able to choose and apply various technologies of information systems' development (P12)	to understand data modelling and database development process	DBDW3
to be able to think systematically when analysing different situations, solving problems and tasks (PS1)	to be able to carefully explain methods, models and techniques in Big Data	DBDW7
to be able to apply the acquired knowledge creatively (PS2)	to be able to apply Data Mining and Warehouse techniques through the use of different tools	DBDW8

to be able to work individually with minimum guidance, manage one's work and time (PS3)	to be able to apply Data Mining and Warehouse techniques through the use of different tools	DBDW8
to be able to work efficiently in a group, manage the team, and act collectively (PS4)	to be able to explain the stages and process different data mining techniques	DBDW6
to be able to understand the impact of information systems solutions on the society and environment and their economic aspects (PS5)	to understand the database concepts, different database models, and database management systems	DBDW1
	to understand general issues of Data Warehouse and Data Mining	DBDW2

Data Bases and Data Warehouses Learning Outcomes

Themes	Theoretical component	Practical component	Learning Objectives	Learning Outcomes	
				Professional	Personal & Social
1	2	3	4	5	6
MODULE 1. Distributed Database Management Systems					
Topic 1. Introduction into Distributed Database Management Systems (DDMS)	1.1. Definition of DDMS 1.2. Characteristics of DDMS 1.3. Advantages and Disadvantages	Lab works	To learn main concepts of DDMS	DBDW1 to understand the database concepts, different database models, and database management systems	PS2, PS4
Topic 2. Functions and Architecture of DDMS	2.1. Functions of DDMS 2.2. Reference Architecture for a DDMS 2.3. Component Architecture	Lab works	To learn architecture and functions	DBDW5 to be able toanalyse of the different architectures and mining techniques	PS2, PS4
1	2	3	4	5	6
Topic 3. Data Allocation and Fragmentation	3.1. Distributed Database Design 3.2. Types of Data Allocation 3.3. Data Fragmentation –	Lab works	To learn design, data allocation and fragmentation strategies	DBDW3 to understand data modelling and database development process	PS2, PS4

	types, advantages and disadvantages				
Topic 4. Distributed Transaction Management	4.1. Transparencies in a DDBMS 4.2. Classification of Transactions 4.3. Distributed Transaction Management 4.4. Distributed Concurrency Control	Lab works	To learn transaction management in distributed environment	DBDW1 to understand the database concepts, different database models, and database management systems DBDW2 to understand general issues of Data Warehouse and Data Mining	PS2, PS4
1	**2**	**3**	**4**	**5**	**6**
Topic 5. Distributed Locking and Deadlock Detection	5.1. Locking Protocols 5.2. Distributed Deadlock Management 5.3. Distributed Recovery Control	Lab works	To learn locking mechanisms and approaches to deadlock detection	DBDW7 to be able to discuss/explain some database security issues	PS2, PS4
Topic 6. Optimization in Distributed Environment	6.1. Distributed Query Optimization 6.2. Data Localization	Lab works	To learn different optimization strategies	DBDW4 to be able to tune and optimize some database applications	PS2, PS4

	6.3. Global Optimization				
Topic 7. Replication Strategies	7.1. Replication Model 7.2. Consistency 7.3. Data Ownership	Lab works	To learn various replication models in DDMS	DBDW4 to be able to tune and optimize some database applications	PS2, PS4
1	**2**	**3**	**4**	**5**	**6**
MODULE 2. Data Warehouses and Data Mining					
Topic 8. Introduction into Data Warehouses (DWH)	8.1. DWH concepts 8.2. DWH Architecture 8.3. DWH Tools and Technologies	Lab works	To learn DWH concepts and architecture	DBDW2 to understand general issues of Data Warehouse and Data Mining	PS2, PS4
Topic 9. DWH Lifecycle	9.1. DWH Planning 9.2.DWH Requirements	Lab works	To learn components of DWH lifecycle	DBDW3 to understand data modelling and database development process	PS2, PS4
Topic 10. DWH Design	10.1. Designing a Data Warehouse Database 10.2. Multidimensional Data Model	Lab works	To learn approaches to DWH design and various data models	DBDW3 to understand data modelling and database development process	PS2, PS4
Topic 11. ETL (Extraction, Transformation, Load) Processes	11.1. Data Extraction 11.2. Data Transformation 11.3 Data Loading	Lab works	To learn extraction, transformation and loading processes	DBDW6 to be able to explain the stages of ETL process	PS2, PS4

1	2	3	4	5	6
Topic 12. Distributed DWH	12.1. Data Placement 12.2. Concurrency Control 12.3. Security Controls	Lab works	To learn methodologies of distributed DWH implementation	DBDW7 to be able to discuss/explain some database security issues	PS2, PS4
Topic 13. DWH Applications	13.1. Retail Sales 13.2. CRM 13.3. Financial Services	Lab works	To learn different DWH application domains	DBDW4 to be able to tune and optimize some database applications DBDW8 to be able to apply Data Mining and Warehouse techniques through the use of different tools	PS2, PS4
Topic 14. Introduction into Data Mining	14.1. Data Mining Techniques 14.2. Data Mining Process 14.3. Data Mining Tools	Lab works	To learn data mining concepts	DBDW2 to understand general issues of Data Warehouse and Data Mining DBDW8 to be able to apply Data Mining and Warehouse techniques through the use of different tools	PS2, PS4