B. P. PODDAR INSTITUTE OF MANAGEMENT & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
ACADEMIC YEAR: 2020-2021 [EVEN SEMESTER]

CO-PO-PSO MAPPING DOCUMENT

Course: Database Management Systems
Code: PCC-CS601
Branch & Sec: CSE (Sec-A&B)

TABLE-1

After completion of the course students will be able to-

Unit.	Hrs	Sub-Topic (from syllabus)	Instructional Learning Outcome(ILO) (Cognitive Process /Knowledge Dimension)	Topic Learning Outcome(TLO)	Course Outcome(CO)
1	12	Database system architecture: Data Abstraction, Data Independence, Data Definition Language(DDL),Data Manipulation Language(DML). Data models: Entity-relationship model, network model, relational and object oriented data models, integrity constraints, data manipulation operations. Relational database design: Domain and data dependency,	1.1 Explain the purpose of database design architecture. PI: 1.4.1, 2.1.1 1.2 Explain different types of database languages PI: 1.4.1, 2.1.1 1.3 Identify entity, relationships and constraints for a given problem statement PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.4, 2.2.5, 3.1.1, 3.2.1, 3.2.2 1.4 Design relations, identify normal forms and decompose as needed with dependency preservation and lossless join for a given problem statement. PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.4, 2.2.5, 3.1.1, 3.2.1, 3.2.2	TLO1.1. Explain the concepts of database systems TLO1.2. Develop a suitable ER model and Relational Model for a given problem definition.	**CO1:** For a given specification of the requirement **design** the databases using E R method and normalization. (Apply) Assessment Tools: CT, OT, PS, Q

		Armstrong's axioms, Normal forms, Dependency preservation, Lossless design.			
2	2	Relational query languages: Relational algebra, Tuple and domain relational calculus,	2.1 Understand the usage of projection, selection, union, set difference, rename cross product and join operations PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.4, 2.2.5, 3.1.1, 3.2.1, 3.2.2 2.2 Understand the usage of tuple relational calculus and domain relational calculus PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.4, 2.2.5, 3.1.1, 3.2.1, 3.2.2	TLO2.1 Use different operators of relational algebra in DBMS TLO2.2 Use different logical connectives and Existential (∃) and Universal Quantifiers (∀)	**CO2:** For a given query **write** relational algebra expressions for that query and optimize the developed expressions (Apply) Assessment Tools: CT, PS,OT,Q
3	4	SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQLserver.	3.1 Illustrate the concepts of creating database using DDL statements PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.3, 2.2.4, 2.2.5, 2.4.3, 2.4.4, 3.1.1, 3.2.1, 3.2.2 3.2 Implement queries using DML statements PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.3, 2.2.4, 2.2.5, 2.4.3, 2.4.4, 3.1.1, 3.2.1, 3.2.2 3.3 Implement advanced queries in PL/SQL PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 3.1.1, 3.2.1, 3.2.2, 4.2.1	TLO3.1 Design suitable solutions of a given problem using SQL TLO3.2 Design PL/SQL procedures for a given problem.	**CO3:** For a given specification **construct** the SQL queries for Open source and Commercial DBMS - MYSQL, ORACLE, andDB2. (Apply) Assessment Tools: CT, PS,OT,Q
4	7	Query processing and	4.1 Understand the basic concepts of query processing	TLO4.1 Construct	**CO4:** For a given

		optimization: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms. Storage strategies: Indices, B-trees, hashing.	and optimization. PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.3, 2.2.4, 2.2.5, 2.4.3, 2.4.4, 3.1.1, 3.2.1, 3.2.2 4.2 Understand the usage of Indices, B-trees and hashing PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.3, 2.2.4, 2.2.5, 2.4.3, 2.4.4, 3.1.1, 3.2.1, 3.2.2	Solution of a given problem statement using Model-view controller pattern. TLO4.2 Utilize the concepts of memory management, commands and methods as objects to write efficient codes.	query optimize its execution using Query optimization algorithms and understand physical database design (Apply) Assessment Tools: CT, PS, TP, Q
5	5	Transaction processing: Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp based schedulers, Multi- version and optimistic Concurrency Control schemes, Database recovery.	5.1 Explain the concepts of ACID properties PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.3, 2.2.4, 2.2.5, 2.4.3, 2.4.4, 3.1.1, 3.2.1, 3.2.2 5.2 Construct serializable schedules and implement locking. PI: 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.3, 2.2.4, 2.2.5, 2.4.3, 2.4.4, 3.1.1, 3.2.1, 3.2.2 5.3 Explain the concept of transaction recovery. PI: 1.2.1, 1.4.1, 2.1.1, 2.1.2, 2.1.3, 2.2.3, 2.2.4, 2.2.5, 2.4.3, 2.4.4, 3.1.1, 3.2.1, 3.2.2	TLO5.1 Apply the concepts of concurrency control in transactions TLO5.2 Use the knowledge of recovery in transactions	**CO5:** For a given set of transactions, analyze the acid properties, implement concurrency control and recovery. (Apply) Assessment Tools: CT, PS,TP,Q
6	6	Database Security: Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL	6.1 Explain the concepts of DAC, MAC, SQL injection PI: 1.4.1, 2.1.1 6.2 Understand concepts of Distributed databases, data warehousing and data mining. PI: 1.4.1, 2.1.1	TLO6.1 Understand the concepts of database security TLO6.2 Understand the advanced database concepts	**CO6:** Understand various aspects of database security and distributed databases. (Understand) Assessment Tools: CT,

		injection. Advanced topics: Object oriented and object relational databases, Logical databases, Web databases, Distributed databases, Data warehousing and data mining.			PS,TP,Q

COURSE OUTCOMES

B. P. PODDAR INSTITUTE OF MANAGEMENT & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
ACADEMIC YEAR: 2020-2021 [EVEN SEMESTER]

CO-PO-PSO MAPPING DOCUMENT

SNO	DESCRIPTION	BLOOOM LEVEL
PCCCS601.1	For a given specification of the requirement design the databases using E R method and normalization.	Apply
PCCCS601.2	For a given query write relational algebra expressions for that query and optimize the developed expressions	Apply
PCCCS601.3	For a given specification construct the SQL queries for Open source and Commercial DBMS -MYSQL, ORACLE, andDB2.	Apply
PCCCS601.4	For a given query optimize its execution using Query optimization algorithms and understand physical database design For a given set of transactions, analyze the acid properties, concurrency control and recovery. Understand various aspects of database security and distributed databases.	Apply
PCCCS601.5	For a given set of transactions, analyze the acid properties, concurrency control and recovery.	Apply
PCCCS601.6	Understand various aspects of database security and distributed databases.	Understand

Summary of COs and POs relation

CO	% of POs (PIs) related with COs
CO1	PO1- 1(20%), PO2- 5 (38%), PO3- 3 (21%)
CO2	PO1- 1 (20%), PO2- 5 (38%), PO3- 3 (21%)

B. P. PODDAR INSTITUTE OF MANAGEMENT & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
ACADEMIC YEAR: 2020-2021 [EVEN SEMESTER]

CO-PO-PSO MAPPING DOCUMENT

CO3	PO1- 1(20%), PO2- 8 (62%), PO3- 3 (21%), PO4- 1 (13%)
CO4	PO1- 1(20%), PO2- 8(62%), PO3- 3 (21%)
CO5	PO1- 2(40%), PO2- 5(38%), PO3- 3(21%)
CO6	PO1- 1(20%), PO2- 1 (8%)

COURSE OUTCOMES VS POs MAPPING (HIGH: 3; MEDIUM: 2; LOW: 1**): [Level1: 1%-19%, Level2: 20%-49%, Level3: 50% or above]**

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PCCCS601.1	2	2	2	-	-	-	-	-	-	-	-	-	3	1
PCCCS601.2	2	2	2	-	-	-	-	-	-	-	-	-	3	2
PCCCS601.3	2	3	2	1	-	-	-	-	-	-	-	-	3	2
PCCCS601.4	2	3	2	-	-	-	-	-	-	-	-	-	3	2
PCCCS601.5	2	2	2	-	-	-	-	-	-	-	-	-	3	2
PCCCS601.6	2	1	-	-	-	-	-	-	-	-	-	-	3	2
PCCCS601	**2**	**2.2**	**1.6**	**0.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**1.8**