

PCCS4205 Database Engineering

Module1: (12 Hrs)

Introduction to database Systems, Basic concepts & Definitions, Data Dictionary, DBA, File-oriented system vs. Database System, Database Language.

Database System Architecture-Schemas, Sub Schemas & Instances, 3-level database architecture, Data Abstraction, Data Independence, Mappings, Structure, Components & functions of DBMS, Data models, Mapping E-R model to Relational, Network and Object Oriented Data models, types of Database systems,

Storage Strategies: Detailed Storage Architecture, Storing Data, Magnetic Disk, RAID, Other Disks, Magnetic Tape, Storage Access, File & Record Organization, File Organizations & Indexes, Order Indices, B+ Tree Index Files, Hashing

Module2: (16 Hrs)

Relational Algebra, Tuple & Domain Relational Calculus, Relational Query Languages: SQL and QBE.

Database Design :-Database development life cycle(DDLC),Automated design tools, Functional dependency and Decomposition, Dependency Preservation & lossless Design, Normalization, Normal forms:1NF, 2NF,3NF,and BCNF, Multi-valued Dependencies, 4NF & 5NF.

Query processing and optimization: Evaluation of Relational Algebra Expressions, Query optimization.

Module3: (12 Hrs)

Transaction processing and concurrency control: Transaction concepts, concurrency control, locking and Timestamp methods for concurrency control.

Database Recovery System: Types of Data Base failure & Types of Database Recovery, Recovery techniques

Advanced topics: Object-Oriented & Object – Relational Database, Parallel & Distributed Database, Introduction to Data warehousing & Data Mining

Text Books:

1. Database System Concepts by Sudarshan, Korth (McGraw-Hill Education)
2. Fundamentals of Database System By Elmasari &Navathe- Pearson Education

References Books:

- (1) An introduction to Database System – Bipin Desai, Galgotia Publications
- (2) Database System: concept, Design & Application by S.K.Singh (Pearson Education)
- (3) Database management system by leon &leon (Vikas publishing House).
- (4) Database Modeling and Design: Logical Design by Toby J. Teorey, Sam S. Lightstone, and Tom Nadeau, "", 4th Edition, 2005, Elsevier India Publications, New Delhi
- (5) Fundamentals of Database Management System – Gillenson, Wiley India