

OLMCA505	Database Systems	L	T	P	C
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Pre-requisite	NIL	Syllabus version			
		1.0			
Course Objectives:					
1. To design schemas using various data models.					
2. To create and manipulate relational database.					
3. To develop non-relational databases.					
Course Outcomes:					
1. Design high level schemas for a system.					
2. Create representational schemas.					
3. Apply database programming to implement relational databases.					
4. Develop models for non-relational data.					
5. Create and manipulate non-relational data.					
Module:1 Database Model					
Evolution of database systems, overview of DBMS, Data Model- relational, semi structured, object relational, non-relational.					
Module:2 High level Models					
ER model- entity, relationships, attributes, roles, subclasses, constraints, UML- classes, keys, associations, subclasses, aggregation and composition.					
Module:3 Representational Model					
Relational model-. Features, Key constraints, update operations, ER, subclass, UML to Relational Model , Algebraic query language- binary, unary, aggregate operations.					
Module:4 Design Theory for Relational Database					
Functional dependencies, rules, Normalization – anomalies, decomposition relations based on multivalued attribute, partial dependency, transitive dependency and trival, algorithms for normalization.					
Module:5 Database Programming					
SQL- data types, variables, create tables, constraints; alter table, constraints, simple queries-delete, update and search using basic operators, complex queries- using set operators, nested and correlated, views and indexes, inbuilt functions. PLSQL- data types, simple loops, create blocks, cursors, function, procedure and trigger.					
Module:6 Semi-structured Data Model					
Data representation, well-formed XML,DTD, schema, programming languages- XPath, Xquery, XSLT.					
Module:7 Non-Relational Databases					
Multimedia Database-sources, issues, Multimedia database applications Multimedia database queries-LOB in SQL. Object Databases - Overview, ODBMS & ORDBMS, Complex Data Types, Object-Identity and Reference Types, NoSQL – Features, advantages, Types, HBase- DDL,DML commands.					
	Total Lecture hours:				120 hours
Text Book(s)					
1.	Fundamentals of Database Systems By Ramez Elmasri, Shamkant B. Navathe · 7 th Edition, pearson publishers, 2016.				
Reference Books					
1.	Database Systems: The Complete Book By Hector Garcia-Molina, second Edition 2009, Pearson Education.				
2.	S.K.Singh, Database Systems: Concepts, Design & Applications, 2011, 2 nd Edition, Pearson education.				
3.	Raghu Ramakrishnan and Johannes Gehrke: Database Management Systems, 2003, 3 rd Edition, McGraw Hill.				

4.	Joe Fawcett, Danny Ayers, Liam R. E. Quin: Beginning XML, 2012, 5 th Edition, Wiley India Private Limited.		
5.	Abraham Silberschatz, S. Sudarshan, Henry F. Korth: Database System Concepts, 2013, 6 th Edition, Tata McGraw - Hill Education.		
Mode of Evaluation: Quiz / Assignment / Mid-Term, FAT			
Recommended by Board of Studies		15.11.2021	
Approved by Academic Council		No. 64	Date 16-12-2021