Detailed Syllabus
Lecture-wise Breakup

Subject Code	15B11CI312	**Semester:** **(specify Odd/Even)**	**Semester** Odd **Session** 2018-2019 **Month from** July'18 **to** Dec'18
Subject Name	DATABASE SYSTEMS & WEB		
Credits	3-1-0	**Contact Hours**	4

Faculty (Names)	**Coordinator(s)**	1. Mahendra Gurve
	Teacher(s) (Alphabetically)	Ankit V,Dhanalekshmi.g, Indu Chawla, Kashav Ajmera ,Mahendra Gurve, Megha Rathi, , Sangeeta,

Course objective:

- To understand and practice the relational database fundamentals - architecture, transactions, development and maintenance.
- To understand the web-application development using relational database.

Learning Outcome:

After successful completion of this course, a student would be able to:

1. Outline database system components and their functions
2. Model the real world systems from the given requirements specification using Entity Relationship Diagrams.
3. Convert the ER model into a relational logical schema using various mapping algorithms
4. Apply SQL commands to define, query and manipulate a relational database
5. For a given query, write relational algebra expressions for that query and optimize the developed expressions.
6. Convert relational algebra expressions into SQL commands and vice versa.
7. Normalize a given database up to Boyce Codd Normal Form (BCNF) based on identified keys and functional dependencies
8. Develop a simple web application with client and server side scripting using Javascript and PHP and connect with a given relational database
9. For a given transaction-processing system, determine the transaction atomicity, consistency, isolation, and durability.
10. Implement the isolation property, including locking based on concurrency control and Serializability of scheduling.

Module No.	Subtitle of the Module	Topics in the module	No. of Lectures for the module
1.	Introduction to Databases	Introduction to Databases, Physical Level of Data Storage, Structure of relational databases, Review of SQL Create, Insert, Update, Delete and Select Statements, Overview of NoSQL databases	3
2.	Web Architecture & Introduction	Motivation, characteristics and complexities of web applications, Basics, of Web Server and Application server, differences between web application and conventional software, architecture layers.	2
3.	Client Side Web Technology	SGML, HTML 5, DHTML, CSS, Java script	4
4.	Server Side Web Technology	PHP, Database Connectivity with PHP	4
5.	Database Design and ER Model	Entity type, Attributes, Relation types, Notations, Constraints, Extended ER Features	4
6.	Relational Model and Structured Query Language	SQL: Data Definition and Data Manipulation, Relational Algebra	9
7.	Procedural Language	PL/SQL: Stored Procedures, Functions, Cursors, Triggers	4
8.	Normalisation	Data Dependencies, 2NF, 3NF, BCNF, building normalised databases	5
9.	Transaction Management	Transactions, Concurrency, Recovery, Security	7
		Total number of Lectures	**42**

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
1.	Henry F Korth, Abraham Silberschatz, S. Sudurshan, Database system concepts, 5th Edition, McGraw-Hill,2006
2.	Ramez Elmasri , Shamkant B. Navathe , Fundamentals of Database Systems, 4th Edition, Pearson Education, 2006.
3.	Ramakrishnan, Gehrke, Database Management Systems, Mcgraw-Hill, 3rd Edition, Addison-Wesley,2006.
4.	Thomas Connolly, Carolyn Begg, Database Systems-A Practical Approach to design, Implementation and Management, 3rd Edition, Addison-Wesley,2002.
5.	"PHP and MYSQL Manual" by Simon Stobart and Mike Vassileiou
6.	"PHP and MYSQL Web Development" by Luke Welling and Laura Thomson(Pearson Education)