PSN College of Engineering and Technology (Autonomous)

Tirunelveli - 627152

COURSE PLAN

Academic year(2022-23)

(Regulation- 2018)

Subject Name	Advance Database Technology
Course Type	Elective Paper
Programme	B. E , Computer Science and Engineering
Year/ Semester/ Section	III / VI
Nature of Course / Credit	Theory / 3
Course Coordinator	Mr.A. Siva
Course Code	503201

VISION AND MISSION OF THE INSTITUTE:

Institution Vision	Emerge as a pioneer Institute inculcating engineering education and sills, research, values and ethics..	
Institution Mission	**IM-1**	To achieve greater heights of excellence in technical knowledge and skill development through innovative teaching and learning practices.
	IM-2	To develop the infrastructure to meet the demands of technological revolution.
	IM-3	To improve and foster research in all dimensions for betterment of society.
	IM-4	To develop individual competencies to enhance innovation, employability and entrepreneurship among students..
	IM-5	To instill higher standards of discipline among students, inculcating ethical and moral values for societal harmony and peace.

VISION AND MISSION OF THE DEPARTMENT:

Department Vision	To emerge as a prominence program to produce quality Computer Science and Engineering graduates.	
Department Mission	**DM-1**	To enhance professional and entrepreneurial skills through industry institute interaction to enable them in getting better placement
	DM-2	To promote research and continuing education.
	DM-3	. To train the students according to their discipline to meet dynamic needs of the society.

1. **PRE REQUISITES**
   - Basics of DBMS concepts
   - Learn about the transactions in DB
   - Role of DBMS in internet and Web applications

2. **COURSE DESCRIPTION**

   Databases store and organize information in a way that make it easy for us to go back. Databases can designed to do track and organize edit data, collect data and product reports. Relational databases store data in a normalized way that offers versatile tools for data storage and data management. Databases linked with a webpage, server side handles the connection to the database and runs the query. Returns the data to be displayed to the user. The database management is the engine that runs the database and enables the server side code to communicate with the database

3. **CARRIER OPPORTUNITIES:**

   - System Analyst
   - System Administrator
   - Database analyst
   - Database controller

4. Syllabus

PSN College of Engineering and Technology			Regulation – 2018			
Department	CSE		BE –CSE			
Semester	VII					
Subject Code	**503201**		**L**	**T**	**P**	**C**
Subject Title	**Advance Database Technology**		3	0	0	3

AIM: To provide an awareness of advanced technologies in database management.

Objective:

- To learn the fundamentals of DBMS.
- To learn about the object ,object-relational & distributed databases
- To learn about different transactions in DB
- To understand the role of DBMS in internet
- To learn about the role of databases in web applications

Unit - I Database Architectures and Models **9**

Multiuser DBMS architectures-Teleprocessing-File-Server Architecture-Traditional Two-Tier Client-Server Architecture-Three-TierClient-Server Architecture-NTier Architectures–Relationalmodel:Terminologies-Commercial RDBMSs: Office Access and Oracle Object-Based Data Models -Record-Based DataModels –Physical DataModels-ConceptualModeling-Functions of a DBMS

Unit - II Distributed Databases **9**

ntroduction–Overview of networking–Functions and architectures of a DDBMS–Distributed relational database design–Transparencies in a DDBMS–Date'stwelve rules for a DDBMS–Distributed transaction management– Distributed concurrency control–Distributed dead lock management–Distributed database recovery-distributed query optimization

Unit - III Transaction Management **9**

Transaction Support - Properties of Transactions- Concurrency Control- Need for Concurrency Control-Time stamping Methods-Multiversion Timestamp Ordering-AdvancedTransactionModels-MultilevelTransactionModel-DeadlockDetection

Unit - IV Web Database **9**

Introduction to Internet and Web–The Web–Scripting languages–Common Gateway Interface–HTTP cookies–Extending the Web Server–Java–Microsoft Web platform–Oracle Internet platform

Unit - V Advance Database Applications **9**

Mobile Database:Architecture-Transaction Management-Temporal Databases-Active-Databases:Architecture-Rule Triggering-Deductive Data bases-Text Databases-Application

Total: 45 hours

5.Course Outcomes :

After successful completion of the course, the students should be able to

CO's	CO – STATEMENTS	PO's
CO1	Design the basic queries for accessing DB.	1,2,3,4,12
CO2	Understand about the object, object-relational & distributed databases	1,,3,5,12
CO3	Identify and solve transaction problems like deadlock.	1,2,3,5,12
CO 4	Link the database with an active webpage.	1,2,3,4,12
CO 5	Understand about the Advance Database Applications	1,3,4,12

6. INSTRUCTIONAL LEARNING OUTCOMES

Unit	Assessment Procedure
I	The outcome will be assess through assignment-1, Class test -1, MCQ Test-1, CAT-1
II	The outcome will be assess through assignment-2, Class test -2, MCQ Test-2, CAT-1, CAT-2
III	The outcome will be assess through assignment-3, Class test -3, MCQ Test-3, CAT-2
IV	The outcome will be assess through assignment-4, Class test -4, MCQ Test-4, CAT-3
V	The outcome will be assess through assignment-5, Class test -5, MCQ Test-5, CAT – 3

7. PROGRAMME EDUCATIONAL OBJECTIVES (PEO's)

S.No	Topic	PEOs
PEO1	**Fundamental Knowledge**	Graduates will be able to perform in technical and managerial rules ranging from design, development and problem solving to suit to the industrial needs.
PEO2	**Career Development**	Graduates will be able to successfully pursue higher education and also Graduates will have the ability to adapt, contribute and innovate new technologies in different domains of Computer Science and Engineering.
PEO3	**Social Identity**	Graduates will be ethically and Socially responsible engineers in Computer Science and Engineering disciplines.

8. PROGRAM OUTCOMES [PO's]

PO's No	KNOWLEDGE	STATEMENTS	PO's No
1	Engineering Knowledge	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	**1**
2	Problem Analysis	Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	**2**
3	Design / Development of Solutions	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	**3**
4	Conduct Investigations of Complex Problems	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.	**4**
5	Modern Tool usage	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.	**5**
6	The Engineer and Society	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.	**6**
7	Environment and Sustainability	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.	**7**
8	Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	8

9	Individual and Team Work	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	9
10	Communication	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	10
11	Project Management and Finance	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	**11**
12	Life-long Learning:	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	**12**

9. PROGRAMME SPECIFIC OBJECTIVE (PSO's)

PSO1	Proficient and Innovative with a strong cognizance in the IOT, through the application of acquired knowledge and skills.
PSO2	Design and Implement IOT based solutions for improving operational efficiency by investigating existing industrial environment.

10. CO- PO MAPPING

CO's NO	COURSE OUTCOME	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO 12	PSO 1	PSO 2
CO1	Design the basic queries for accessing DB	2	2	2									2		2
CO2	Understand about the object, object-relational & distributed databases	2		2	1								2		2
CO 3	Identify and solve transaction problems like deadlock	2	2	1		2							2		2
CO4	Link the database with	2	1	2	2								2		2

	an active webpage														
CO5	Understand about the Advance Database Applications	2		2	2	2							2		2

11. TEXT BOOK & REFERENCE BOOK LIST

Sl. No	Description	Lege
	Text Book(s):	
1	Thomas Connolly and Carolyn Begg,"Database Systems: A Practical Approach To Design, Implementation And management", FourthEdition,Pearson Education,2009.	T
	Reference Book(s):	
1	JeffreyA.Hoffer,"Modern Database Management Systems",Ninth edition,Pearson Education,2010.	R
2	Abraham Silberschatz, Henry F.Korth, S. Sudharshan, "Database System Concepts", TataMcGraw Hill,2011.	R

12. Web Resources

Sl. No	Topic	Web link
1	Design the basic queries for accessing DB	https://edu.gcfglobal.org/en/access2016/designing-a-simple-query/1/

13. E- learning / NPTEL

Video	https://www.youtube.com/watch?v=FpVblQlBc14
Lecture Notes	https://www.studocu.com/in/course/anna-university/advanced-database-technologies/4339112

14. MAGAZINE & JOURNALS

Magazine	*https://www.themediaant.com/magazine/journal-of-advanced-database-management-systems-advertising*
Journals	*https://www.researchgate.net/publication/234765426_Advanced_Database_Technology_and_Design*

15. LESSON PLAN

S. No.	Unit	Topic to be covered	Hours Needed	Mode of Teaching (BB/PPT/ Others)	Text/ Ref. Book	P
		Database Architectures and Data Models				
1	I	Multiuser DBMS architectures	1	**BB**	T1	
2		Teleprocessing	1	**BB**	T1	1
3		File Server Architecture	1	**BB**	T1	2
4		Traditional Two-Tier Client-Server Architecture	1	**BB**	T1	
5		Three-TierClient-Server Architecture, NTier Architectures	1	**PPT**	T1	3
6		Relational model:Terminologies	1	**PPT**	T1	
7		Commercial RDBMSs: Office Access and Oracle Object-Based Data Models	1	**PPT**	T1	
8		Record-Based DataModels, Physical DataModels	1	**BB**	T1	
9		ConceptualModeling, Functions of a DBMS	1	**BB**	T1	
		Distributed DBMS				
11	II	Introduction–Overview of networking,	1	**BB**	T1	
12		Functions and architectures of a DDBMS	1	**BB**	T1	7
13		Distributed relational database design	1	**PPT**	T1	
14		Transparencies in a DDBMS	1	**PPT**	T1	
15		Date'stwelve rules for a DDBMS	1	**BB**	T1	
16		Distributed transaction management, Distributed concurrency control	1	**BB**	T1	
17		Distributed dead lock management, Distributed database recovery	1	PPT	T1	
18		distributed query optimization	1	PPT	T1	
		Transaction Management				
19	III	Transaction Support	1	PPT	T1	
20		Concurrency Control	1	PPT	T1	
21		Need for Concurrency Control	1	PPT	T1	
22		Time stamping Methods	1	PPT	T1	
23		Multiversion Timestamp Ordering	1	PPT	T1	
24		Advanced Transaction Models	1	**BB**	T1	

S. No.	Unit	Topic to be covered	Hours Needed	Mode of Teaching (BB/PPT/ Others)	Text/ Ref. Book	P
25		Multi level Transaction Model	1	**BB**	R1	
26		Dead lock Detection	1	**BB**	R1	
27		Deadlock avoidance	1	**BB**	R1	
		Web database				
28	**IV**	Introduction to Internet and Web	1	**BB**	T1	
29		The Web–Scripting languages	1	**BB**	T1	
30		Common Gateway Interface	1	**BB**	T1	
31		HTTP cookies	1	**BB**	T1	
32		Extending the Web Server	1	**BB**	T1	
33		Java in database	1	**BB**	T1	
34		Microsoft Web platform	1	**PPT**	R1	
35		Oracle Internet platform	1	**PPT**	R1	
36		Oracle Application Server	1	**PPT**	R2	
		Advanced Database Application				
37	**V**	Mobile Database:Architecture	2	**BB**	T1	
38		Transaction Management	2	**BB**	T1	
39		Temporal Databases	2	**BB**	T1	
40		Active-Databases:Architecture	1	**BB**	T1	
41		Rule Triggering	1	**BB**	T1	
42		Deductive Data bases	1	**PPT**	R1	
43		Text Databases	1	**PPT**	R1	
44		Application	1	**PPT**	R2	
45		CRM Applications	1	**PPT**	R2	
	Total Hours Needed = 45 H					

16. ASSIGNMENTS

Assignment	PART A	CO	BL
1	File Server Architecture	**CO1**	**2**
2	Functions and architectures of a DDBMS	**CO2**	**4**
3	Advanced Transaction Models	**CO3**	**3**
4	Common Gateway Interface	**CO4**	**3**
5	Transaction Management	**CO5**	**1**

17. ASSIGNMENT RUBRICS

QUALITY	MARKS
Submission on Date	2
Understanding	3
Solving Skills/Presentation	3
End results with correct units conversions / Conclusion	2

18.MAPPING COs with ASSIGNMENTS

19.

CO's	CO – STATEMENTS	A1	A2	A3	A4	A
CO1	Design the basic queries for accessing DB	2	-	-	-	-
CO2	Understand about the object, object-relational & distributed databases	-	2	-	-	-
CO3	Identify and solve transaction problems like deadlock	-	-	2	-	-
CO4	Link the database with an active webpage	-	-	-	2	-
CO5	Study and implement the file system and understand the security issues in operating system	-	-	-	-	2

ASSESSMENT METHODOLOGIES

Assessment Tool			Description
Direct Assessment (80%)	**Internal Test**	20%	25% each for CAT – I, CAT – II, CAT –III, Class Test and Assignments.
	Assignments		
	Practical lab (Internal)		-
	End semester Examination	80%	100% for End Semester Examination

	Practical lab (External)		-
Indirect Assessment (20%)	**Course End Survey (80%)**		
	Exit Survey (20 %)		At the end of the course completion will be evaluated

20. DISTRIBUTION OF PORTIONS FOR ASSESSMENT TESTS

Assessments	Portion Covering Unit	% of weightage
CAT – I	Unit-1 and Unit-2 (50%)	50
CAT – II	Unit-2(50%) and Unit-3	50
CAT – III	Unit – 4 and Unit -5	50
Assignments – 1	Unit – 1	10
Class Test -1	Unit – 1	26
Assignments – 2	Unit – 2	10
Class Test -2	Unit – 2	26
Assignments – 3	Unit -3	10
Class Test -3	Unit -3	26
Assignments – 4	Unit – 4	10
Class Test -4	Unit – 4	26
Assignments – 5	Unit – 5	10
Class Test -5	Unit – 5	26

21. MARK ALLOTMENT FOR CO ASSESSMENT:

COs	CAT - I	CAT - II	CAT - III	Assignment	MCQ	End Semester
CO1	30			10	2	20
CO2	20	20		10	2	20
CO3		30		10	2	20
CO4			25	10	2	20

CO5			25	10	2	20

22. CONTENT BEYOND SYLLABUS

UNIT	TOPICS TO BE COVERED	Hrs Taken
I	Data model schema	**1**
2	VM Migration service	**1**
3	Cloud security challenges	**1**

Staff in-charge **HOD/CSE** **Principal**