



**Nadar Saraswathi College of Engineering and Technology,  
Vadapudupatti, Theni - 625 531**  
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

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**Course File Leaf (Theory)**

**For the Academic Year 2023 - 2024 (Odd/Even Semester)**

<b>Staff Name</b>	VIGNESH L.S	<b>Dept. / Designation</b>	AP/AI & DS	<b>Strength</b>	21
<b>Course/Branch</b>	B.Tech./AI & DS	<b>Year / Semester</b>	II/03	<b>Credit</b>	3
<b>Course Code/ Subject Code/ Choice</b>	<b>C303/AD3391</b>	<b>Subject Name</b>	Database Design and Management		

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4.	Individual Time Table	17.	CAT / Unit Test Mark Statement & Analysis
5.	Course Materials-Unit I	18.	Internal Test Questions and Answer Key
6.	Course Materials-Unit II	19.	Internal Test Answer Papers ( Best, Average, Poor)
7.	Course Materials-Unit III	20.	Internal Mark Statement & Result Analysis Report
8.	Course Materials-Unit IV	21.	Action taken / Impact Analysis on Slow Learners & Bright Students List.
9.	Course Materials-Unit V	22.	Internal Assessment Consolidated Report
10.	Content Beyond Syllabus with Materials & Source	23.	Previous CO Attainment Analysis Report, CO Attainment Analysis (Current Sem ) & Analysis Report with Proof
11.	Tutorial Sheet(If Applicable)	24.	Course Exit Survey ( Indirect Attainment )
12.	Exam Cell Question Bank (Part-A,B&C)	25.	University Feedback Summary (with Question), University Mark Statement & Result analysis
13.	Question Bank (Two marks with answers)	26.	POs and COs Attainment (After Publishing University Results with Indirect )

**Review Particulars:**

No.	Date	Done by	Remarks	Signature
* (Verified By Department Audit In charge)				

Staff Alteration (If any): \_\_\_\_\_ from \_\_\_\_\_.

**Staff In Charge**

**Head of the Department**

**Principal**



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**Course Plan (Theory)**

**For the Academic Year 20 - (Odd/Even Semester)**

<b>Staff Name</b>	VIGNESH L.S	<b>Dept. / Designation</b>	AP/AI & DS	<b>Strength</b>	21
<b>Course/Branch</b>	B.Tech./AI & DS	<b>Year / Semester</b>	II/03	<b>Credit</b>	3
<b>Course Code/ Subject Code/Choice</b>	<b>C303/AD3391</b>	<b>Subject Name</b>	Database Design and Management		

- I. Objective (5)** : The student should be made to :
- OB1:** To introduce database development life cycle and conceptual modeling
  - OB2:** To learn SQL for data definition, manipulation and querying a database
  - OB3:** To learn relational database design using conceptual mapping and normalization
  - OB4:** To learn transaction concepts and serializability of schedules
  - OB5:** To learn data model and querying in object-relational and No-SQL databases

**II. Pre requisites** : Should have known about front end , Back end and Data's Basic structures

**III. Guidelines (Paper's Nature)** : Theoretical

**IV. Course Out Come (5)** : At the end of this course, the students will be able to

COs	Outcomes	Bloom's Taxonomy
<b>C402.1</b>	Understand the database development life cycle and apply conceptual modeling	BT5
<b>C402.2</b>	Apply SQL and programming in SQL to create, manipulate and query the database	BT4
<b>C402.3</b>	Apply the conceptual-to-relational mapping and normalization to design relational database	BT4
<b>C402.4</b>	Determine the serializability of any non-serial schedule using concurrency techniques	BT3
<b>C402.5</b>	Apply the data model and querying in Object-relational and No-SQL databases	BT4

**V. CO – PO, PSO Mapping: (3- > Strong, 2- > Moderate, 1 – >Low)**

CO-PO,PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
C402.1	2	2	3	3	-	-	-	-	3	1	2	1	2	3	3	3	-
C402.2	2	3	1	3	1	-	-	-	1	2	2	1	3	3	3	3	-
C402.3	2	2	2	1	1	-	-	-	2	3	1	2	1	1	2	3	-
C402.4	2	2	3	1	-	-	-	-	1	3	1	1	2	2	2	3	-
C402.5	3	1	3	2	1	-	-	-	2	2	1	1	2	1	1	3	-

**VI. Books to be Referred (Available in Library):**

**T1:** Thomas M. Connolly, Carolyn E. Begg, Database Systems – A Practical Approach to Design, Implementation, and Management, Sixth Edition, Global Edition, Pearson Education, 2015.

**T2:** Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database Systems, 7th Edition, Pearson, 2017.

**R1:** Toby Teorey, Sam Lightstone, Tom Nadeau, H. V. Jagadish, "DATABASE MODELING AND DESIGN - Logical Design", Fifth Edition, Morgan Kaufmann Publishers, 2011.

**R2:** Carlos Coronel, Steven Morris, and Peter Rob, Database Systems: Design, Implementation, and Management, Ninth Edition, Cengage learning, 2012

**R3:** Abraham Silberschatz, Henry F Korth, S Sudharshan, "Database System Concepts", 6th Edition, Tata Mc Graw Hill, 2011.

**R4:** Hector Garcia-Molina, Jeffrey D Ullman, Jennifer Widom, "Database Systems:The Complete Book", 2nd edition, Pearson.

**R5:**Raghu Ramakrishnan, "Database Management Systems", 4th Edition, Tata Mc Graw Hill, 2010.

VII. E-Learning Resources : [www.lsisreviving.weebly.com](http://www.lsisreviving.weebly.com)

EL1:

EL2:

VIII. Method of Evaluation (Considered for CO Assessment) :

CO Assessment Direct									
CO Evaluation Internal :									CO Eval Ext
Int 1,2/ Mod 1,2	Unit / CAT	Case Study	Assign.,	Seminar	Quiz	GD	RP	Project/Lab	University
Yes	No	Yes	Yes	Yes	No	No	NA	NA	Yes
CO Assessment Indirect									
Course Exit Survey							Yes		

IX. Co Attainment analysis:

Target Competence Threshold (Level)	Internal Exam**	If Class average is less than 60% - Threshold is 50%			If Class average is 60% and above - Threshold is 60%		
	University Exam**	If Class average is less than 70% - Threshold is 50%			If Class average is 70% and above - Threshold is 70%		
	Assignment**	Common	Group / Sem	Case Study	Mini Project / Lab	Quiz /GD / RP	
		20%	40%	50%	50%	30%	
Benchmark & Attainment Level	70% Students Got More Than Target Competence Level					<b>3</b>	
	60% Students Got More Than Target Competence Level					<b>2</b>	
	50% Students Got More Than Target Competence Level					<b>1</b>	
	If Students Below 50% of Target					<b>Not Met</b>	

CO Attainment Calculations	Attainment Scores in Scale of 3	
	Direct Attainment of COs	= 0.8 * CO attainment (Direct) + 0.2 * CO attainment (In-Direct)
Overall Attainment of CO	= 0.5 * CO attainment (Internal Overall) + 0.5 * CO attainment (University)	
PO Individual Attainment Calculations	= Overall Attainment of CO *(Average of CO-PO Mapping Score of Individual POs / 3)	
PSO Individual Attainment Calculations	= Overall Attainment of CO *(Average of CO-PSO Mapping Score of Individual PSOs / 3)	

\*\*varies by subject and also by department

X. Lesson Plan:

S. No.	Topic	CO	BTL	Content Delivery Mode *	Reference Book no. & Page no. / E-sources	No. of Periods Required	Cumulative Periods
<b>UNIT I</b>							
1.	Database environment – Requirements collection	1	5	WS	T2 & 83	2	2
2.	Database system development lifecycle	1	5	WS	T2 & 345	2	4
3.	Database design - Entity-Relationship model	1	5	WS	T1 & 59	2	6
4.	Enhanced-ER model	1	5	WS	T1 & 107	2	8
5.	UML class diagrams	1	5	WS	T1 & 85	2	10
<b>UNIT-II</b>							
6.	Relational model concepts	2	4	WS	T2 & 149	2	12
7.	Integrity constraints	2	4	WS	T2 & 161	2	14

8.	SQL Data manipulation	2	4	WS	T2 & 191	2	16
9.	SQL Data definition	2	4	WS	T2 & 233	2	18
10.	Views -SQL programming.	2	4	WS	T2 & 271	2	20
<b>UNIT-III</b>							
11.	ER and EER-to-Relational mapping	3	4	SEM	T1 & 290	2	22
12.	Update anomalies – Functional dependencies	3	4	SEM	T1 & 503	2	24
13.	Inference rules – Minimal cover	3	4	SEM	T1 & 505	2	26
14.	Properties of relational decomposition	3	4	SEM	T1 & 513	2	28
15.	Normalization (up to BCNF).	3	4	SEM	T1 & (466 – 485)	2	30
<b>UNIT-IV</b>							
16.	Transaction concepts – properties	4	3	BB	T1 & 746	2	32
17.	Schedules	4	3	BB	T1 & 759	2	34
18.	Serializability	4	3	BB	T1 & 763	2	36
19.	Concurrency Control	4	3	BB	T1 & 781	2	38
20.	Two-phase locking techniques.	4	3	BB	T1 & 782	2	40
<b>UNIT-V</b>							
21.	Mapping EER to ODB schema	5	4	PPT	E-sources	2	42
22.	Object identifier– reference types – rowtypes	5	4	PPT	E-sources	2	44
23.	UDTs – Subtypes and supertypes – user-defined routines –	5	4	PPT	E-sources	2	46
24.	Collection types – Object Query Language; No-SQL: and	5	4	PPT	E-sources	2	48
25.	CAP theorem – Document-based: MongoDB data model	5	4	PPT	E-sources	2	50
26.	CRUD operations; Column-based: Hbase data model and CRUD operations.	5	4	PPT	E-sources	2	52

\* **BB** - Blackboard, **VD** – Videos, **GD** – Group Discussion, **RP** – Role Play, **SEM** –Seminar, **DM**-Demo/Lab, **WS**- Web Search, **MPJ** – Mini Project., **AS**-Assignment, **TUT**- Tutorial, **CO** – Course Outcome, **BTL**- Blooms Taxonomy Level (L1-L6).

**XI. Content Beyond Syllabus:**

Course Code & Title	Syllabus of content beyond syllabus	Total Number of contact hours				Contributing COS	Contributing POs & PSOs	Source
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours			
		3				CO2,CO6	PO 2,3 & 5, PSO 2	Received from DAC / Placement Cell / Alumni

**XII. Lesson Schedule (Planned with Timetable):**

No.	Unit No / Description	Duration (Date)		Total No of Periods	Course Outcome	Remarks (if any Deviation)
		From	To			
1.	UNIT 1			10	CO1	
2.	UNIT 2			10	CO2	
3.	UNIT 3			10	CO3	
4.	UNIT 4			10	CO4	
5.	UNIT 5			12	CO5	

**XIII. Unit Test / CAT Test:**

No.	Date	UNIT / CAT Portion	No.	Date	UNIT / CAT Portion
1		UNIT 1	4		UNIT 4
2		UNIT 2	5		UNIT 5
3		UNIT 3			

**XIV. Internal / Model Test:**

No.	Tentative Date	Portion	Total	Appear	Pass	%
1		UNIT – 1 & UNIT -2				
2		UNIT – 3 & UNIT -4				
3		All Units				

**XV. Activity Based Learning:**

S.No.	Internal Phase	Type of Activity*	Course Outcome	Topic	Marks Allotted	Announced Date	Submitted Date
1	I	ASS	CO2	SQL – Queries Learning	40	25/10/23	
2	II	SEM	CO2	Applying DB to front end	40	15/11/23	

\* Seminar /Project work / Quiz/ Group Discussion & Role Play, Assignment (Individual /Group) etc.,

**XVI. Tutorial: (If Applicable )**

Unit No.	Topic * (Questions /Problem /Exercises)	Course Outcome	Question Count	Discussed Date	Completed Date
1.					
2.					

**\*Attach Proof of Tutorial Sheets Separate in given Format.**

**Staff In Charge**

**Head of the Department**

**Principal**

