

DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE

(AUTONOMOUS)
 (Approved by AICTE & Affiliated to Anna University, Chennai)
 Accredited with 'A' Grade by NAAC, Accredited by TCS
 Accredited by NBA with BME, ECE & EEE
PERAMBALUR - 621 212. Tamil Nadu.
 website : www.dsengg.ac.in

**COURSE PLAN (2025 – 2026 EVEN Semesters)**

Name of the Faculty				
Designation/Department	AP/IT			
Course Code/Name	U23CST44/ COMPUTER NETWORKS			
Year/Section/Department	II/A&B/IT			
Credits Details	L: 3	T: 0	P:0	C:3
Total Contact Hours Required	45			

Syllabus:

UNIT I - INTRODUCTION AND APPLICATION LAYER	No. of Periods: 9
Data Communication – Networks – Network Types – Protocol Layering – TCP/IP Protocol suite – OSI Model – Introduction to Sockets – Application Layer protocols: HTTP – FTP – Email protocols (SMTP – POP3 – IMAP – MIME) – DNS – SNMP	
TRANSPORT LAYER	
Introduction – Transport-Layer Protocols: UDP – TCP: Connection Management – Flow control – Congestion Control – Congestion avoidance (DECbit, RED) – SCTP – Quality of Service	
UNIT III-NETWORK LAYER	No. of Periods: 9
Switching: Packet Switching – Internet protocol – IPV4 – IP Addressing – Subnetting – IPV6, ARP, RARP, ICMP, DHCP	
UNIT IV- ROUTING	No. of Periods: 9
Routing and protocols: Unicast routing – Distance Vector Routing – RIP – Link State Routing – OSPF – Path-vector routing – BGP – Multicast Routing: DVMRP – PIM	
UNIT V- DATA LINK AND PHYSICAL LAYERS	No. of Periods: 9
Data Link Layer – Framing – Flow control – Error control – Data-Link Layer Protocols – HDLC – PPP – Media Access Control – Ethernet Basics – CSMA/CD – Virtual LAN – Wireless LAN (802.11) – Physical Layer: Data and Signals – Performance – Transmission media- Switching – Circuit Switching.	

Objectives:

- To learn the fundamentals of
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Text Book:

T1:Larry L. Peterson, Bruce S. Davie, Computer Networks: A Systems Approach, Fifth Edition, Morgan Kaufmann Publishers Inc., 2012
T2:William Stallings, Data and Computer Communications, Tenth Edition, Pearson Education, 2013.

Reference Book:

R1:Nader F. Mir, Computer and Communication Networks, Second Edition, Prentice Hall, 2014.
R2:Ying-Dar Lin, Ren-Hung Hwang, Fred Baker, —Computer Networks: An Open Source Approach, McGraw Hill, 2012.

Website:

W1: https://archive.nptel.ac.in/courses/106/105/106105183/
W2: https://archive.nptel.ac.in/courses/106/105/106105183/

Course Plan:

Topic Number	Topic	Reference Detail	Page Number	Mode of teaching	Number of Periods Required	Cumulative Period
UNIT I						
1	Data Communication	T1	3-9	BB	1	1
2	Networks – Network Types –	T1	10-22	BB	1	2
3	Protocol Layering – TCP/IP Protocol suite	T1	23-25	BB	1	3
4	– OSI Model – Introduction to Sockets –	T1	39-42	BB	1	4
5	Application Layer protocols: HTTP –	T1/W1	45-48	BB	2	6
6	FTP – Email protocols (SMTP	T1/W1	57-63	PPT & Video	1	7
7	– POP3	T1	63-65	BB	1	8
8	– IMAP – MIME) – DNS – SNMP	T1	65-72	BB	1	9

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Outcome of Unit I:						
<ul style="list-style-type: none"> Classify the modern and futuristic database applications based on size and complexity Know the features of relational databases Demonstrate SQL fundamentals 						
UNIT II						
9	Introduction	T1	262-274	BB	1	10
10	Transport-Layer Protocols:	T1	274-283	BB	1	11
11	UDP – TCP: Connection Management	T1	295-304	BB & Video	1	12
12	– Flow control – Congestion Control –	T1	338-348	BB	1	13
13	Congestion avoidance (DECbit, RED)	T1	327-329	BB	1	14
14	SCTP – Quality of Service	R2	229-238	BB	2	16
15	Quality of Service	T1	355-360	PPT	1	17
16		T1	355-360	BB	1	18
Outcome of Unit II:						
<ul style="list-style-type: none"> Map ER model to Relational model to perform database design effectively Outline SQL fundamentals Demonstrate different normal forms 						
UNIT III						
17	Switching: Packet Switching	T1	627-629	BB	1	19
18	Internet protocol	T1	635-641	BB	1	20
19	IPV4	T1/W2	641-646	BB	2	22
20	IP Addressing –	T1	661-674	BB	1	23
21	Subnetting	T1	620-625	BB	1	24
22	IPV6	T1/W2	679-682	BB	1	25
23	ARP,	T1	682-685	PPT & Video	1	26
24	RARP, ICMP, DHCP	T1	685-691	BB	1	27
Outcome of Unit III:						
<ul style="list-style-type: none"> Write queries using normalization criteria and optimize queries Demonstrate the uses of schedule and serializability. Explain about deadlock transaction 						
UNIT IV						
25	Routing and protocols: Unicast routing –	T1	441-449	BB	1	28

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26	- Distance Vector Routing	T1	451-457	BB	1	29
27	RIP – Link State Routing	T1	475-476	BB	1	30
28	OSPF	T1/W1	485-500	BB	2	32
29	Path-vector routing – BGP	T1	500-506	BB	1	33
30	BGP – Multicast Routing:	R3	309-318	BB	1	34
31	DVMRP – PIM	T1	537-541	PPT & Video	1	35
32		T1	541-542	BB	1	36

Outcome of Unit IV:

- Compare and contrast various indexing strategies in different database systems
- Outline the concepts of B+ tree and B-Tree index files

UNIT V

33	Data Link Layer Framing	T1	441-449	BB	1	28
34	Flow control Error control	T1	451-457	BB	1	29
35	– Data-Link Layer Protocols –	T1	475-476	BB	1	30
36	HDLC – PPP –	T1/W1	485-500	BB	2	32
37	Media Access Control	T1	500-506	BB	1	33
38	– Ethernet Basics – CSMA/CD –	R3	309-318	BB	1	34
39	Virtual LAN – Wireless LAN (802.11) –	T1	537-541	PPT & Video	1	35
40	Physical Layer: Data and Signals – Performance –	T1	541-542	BB	1	36
41	Transmission media- Switching – Circuit Switching.	T1	542-5423	BB	1	37

Outcome of Unit V:

- Appraise how advanced databases differ from traditional databases.
- Design Object-based Databases -ODL,OQL
- Demonstrate XML database with XML query.

Course Outcome:

At the end of course:

Students should be able to learn:

CO1: Explain the fundamental concepts of relational database and SQL. (K2)

CO2: Use ER model for Relational model mapping to perform database design effectively. (K3)

CO3: Summarize the properties of transactions and concurrency control mechanisms. (K2)

CO4: Outline the various storage and optimization techniques. (K2)

CO5: Compare and contrast various indexing strategies in different database systems. (K2)

CO6: Explain the different advanced databases. (K2)

Course Outcome Vs Program Outcome Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	2	1	-	-	-	-	-	-	-	-	-	-
CO 2	3	2	1	1	-	-	-	-	-	-	-	-
CO 3	2	1	-	-	-	-	-	-	-	-	-	-
CO 4	2	1	-	-	-	-	-	-	-	-	-	-
CO 5	2	1	-	-	-	-	-	-	-	-	-	-
CO 6	2	1	-	-	-	-	-	-	-	-	-	-
AVG	2.17	1.17	1.00	1.00	-	-	-	-	-	-	-	-

Content beyond Syllabus:

- ❖ JDBC connectivity using databases.
- ❖ Creating Databases

Assignment:

Web portal	Assignment	Components	Topic Number with Topic / Unit Details	Relevance to CO
Web portal 1	--	Assessment – I (60)	Unit I and II	CO1 & CO2
	1	Assignment Handwritten (20)	1. Internetworking concepts and architectural model 2. Classful Internet address 3. ICMP	CO1

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Web portal	Assignment	Components	Topic Number with Topic / Unit Details	Relevance to CO
	2	Poster / PPT Presentation (20)	1. Interactive data flow 2. Bulk data flow	CO2
Web portal 2	--	Assessment – II (60)	Unit III and IV	CO3 & CO4
	3	Seminar (20)	1. Routing algorithms 2. Error processing (ICMP)	CO3
	4	Case Study Report/ Mini Project/Model Making (20)	1. Data structure and Input processing 2. Finite state machine implementation	CO4
Web portal 3	--	Model Exam (75)	Unit I to V	CO1 to CO6
	5	MCQ (15)	Unit I to V	CO1 to CO6
	--	Course Attendance (10)	--	--

Submission Details:

Phase 1 (Before AT 1)	Phase 2 (Before AT 2)	Phase 3 (Before Model Exam)
Assignment 1	Assignment 2	Assignment 3

Google Classroom Code : **4t45tw3**

Google Classroom Name : U23CST44/ **COMPUTER NETWORKS**

Prepared By

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