SRI VASAVI ENGINEERING COLLEGE (Autonomous)

(Permanent Affiliation to JNTUK, Kakinada),
PEDATADEPALLI, TADEPALLIGUDEM-534 101

A.Y: 2025-26

V SEM CSE Handbook
(V23 Regulation)

Department of Computer Science and Engineering (Accredited by NBA)

Pedatadepalli, Tadepalligudem-534101, A.P

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INSTITUTE

VISION MISSION

INSTITUTE

VISION AND MISSION

VISION

To be a premier technological institute striving for excellence with global perspective and commitment to the nation.

MISSION

➢ To produce engineering graduates of professional quality and global perspective through Learner Centric Education.

➢ To establish linkages with government, industry and research laboratories to promote R&D activities and to disseminate innovations.

➢ To create an eco-system in the institute that leads to holistic development and ability for life-long learning..

DEPARTMENT

VISION MISSION

Vision:

- To evolve as a centre of academic and research excellence in the area of Computer Science and Engineering.

Mission :

➢ To utilize innovative learning methods for academic improvement.

➢ To encourage higher studies and research to meet the futuristic requirements of Computer Science and Engineering.

➢ To inculcate Ethics and Human values for developing students with good character

PROGRAM EDUCATIONAL OBJECTIVES, PROGRAM OUTCOMES & PROGRAM SPECIFIC OUTCOMES

Program Educational Objectives (PEOs): Graduates of this programme will

PEO 1: Adapt to evolving technology.

PEO 2: Provide optimal solutions to real time problems.

PEO 3: Demonstrate his/her abilities to support service activities with due consideration for Professional and Ethical Values.

Programme Specific Outcomes (PSO s): A graduate of the Computer Science and Engineering Program will be able to:

PSO 1: Use Mathematical Abstractions and Algorithmic Design along with Open Source Programming tools to solve complexities involved in Programming. [K3]

PSO 2: Use Professional engineering practices and strategies for development and maintenance of software. [K3]

Program Outcomes (POs): Computer Science Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of Mathematics, Science, Engineering Fundamentals and Concepts of Computer Science Engineering to the solution of complex Engineering problems. **[K3]**

2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of Mathematics, Natural Sciences and Computer Science. **[K4]**

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specific needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations. **[K5]**

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. **[K5]**

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex Engineering activities with an understanding of the limitations**. [K3]**

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. **[K3]**

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. **[K3]**

8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the Engineering practice. **[K3]**

9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. **[K6]**

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. **[K2]**

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.
[K6]

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.
[K1]

ACADEMIC CALENDAR

Principal's Office
Date: 02-06-2025

Academic Calendar
For III B.Tech (V and VI Semesters), Academic Year 2025-26

Description	From	To	Weeks
V Semester			
Commencement of Class Work	07.07.2025		
I Unit of Instructions	07.07.2025	30.08.2025	8 W
I Mid Examinations	01.09.2025	06.09.2025	1 W
II Unit of Instructions	08.09.2025	01.11.2025	8 W
II Mid Examinations	03.11.2025	08.11.2025	1 W
Preparation & Practicals	10.11.2025	15.11.2025	1 W
End Examinations	17.11.2025	29.11.2025	2 W
Commencement of Next Semester Class Work (VI Semester)	01.12.2025		
VI Semester			
I Unit of Instructions	01.12.2025	24.01.2026	8 W
I Mid Examinations	27.01.2026	31.01.2026	1 W
II Unit of Instructions	02.02.2026	28.03.2026	8 W
II Mid Examinations	30.03.2026	04.04.2026	1 W
Preparation & Practicals	06.04.2026	11.04.2026	1 W
End Examinations	13.04.2026	25.04.2026	2 W
Industry Internship	27.04.2026	13.06.2026	8 W
Commencement of Next Semester Class Work (VII Semester)	15.06.2026		

PRINCIPAL

Copy to : ALL

Vision
To be a premier technological institute striving for excellence with global perspective and commitment to the nation.
Mission
• To produce Engineering graduates of professional quality and global perspective through learner-centric education.
• To establish linkages with government, industry and Research laboratories to promote R&D activities and to disseminate innovations.
• To create an eco-system in the institute that leads to holistic development and ability for life-long learning.

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Pedatadepalli, TADEPALLIGUDEM-534 101, W.G. Dist.
Department Of Computer Science &Engineering (Accredited by NBA)

CLASS CONSOLIDATED TIME TABLE
(Academic Year 2025-26)

Class: V Semester w.e.f. 07-07-2025

Section – A **Class Coordinator: Ms.Ch Naga Padma Latha** **Room No.: G-203**

Periods	1	2	3	4	1:00PM 2:00PM	5	6	7
Time / Day	(09.30 AM-10.30 AM)	(10.30 AM-11.20 AM)	(11.20 AM-12.10 PM)	(12.10 PM-01.00 PM)		(02.00 PM-02.50 PM)	(02.50 PM-03.40 PM)	(03.40 PM-04.30 PM)
Mon	EE		APTITUDE		LUNCH BREAK	DM Lab		
Tue	AI	MCCP-I				CN Lab		
Wed	CN	AI	ACD	LIBRARY		AI	DM	CN
Thu	CN	DM	ACD	ACD		FSD-2	AI	SPORTS
Fri	ACD	AI	CN	DM		MCCP-I		
Sat	DM	DM	CN	ACD		FSD-2		

Section – B **Class Coordinator: Mr. Syed Akheel Hassan Gori** **Room No.: G-204**

Periods	1	2	3	4	1:00PM 2:00PM	5	6	7
Time / Day	(09.30 AM-10.30 AM)	(10.30 AM-11.20 AM)	(11.20 AM-12.10 PM)	(12.10 PM-01.00 PM)		(02.00 PM-02.50 PM)	(02.50 PM-03.40 PM)	(03.40 PM-04.30 PM)
Mon	AI	CN	DM	AI	LUNCH BREAK	EE		APTITUDE
Tue	ACD	MCCP-I				APTITUDE	AI	CN
Wed	DM	DM Lab				ACD	ACD	LIBRARY
Thu	AI	FSD-2	CN	CN		DM	DM	ACD
Fri	DM	CN Lab				MCCP-I		
Sat	CN	FSD-2				AI	ACD	SPORTS

Section: C **Class Coordinator:** Mr. T. Nava Krishna **Room No:** G-302

Periods	1	2	3	4	1:00PM 2:00PM	5	6	7
Time / Day	(09.30 AM-10.30 AM)	(10.30 AM-11.20 AM)	(11.20 AM-12.10 PM)	(12.10 PM-01.00 PM)		(02.00 PM-02.50 PM)	(02.50 PM-03.40 PM)	(03.40 PM-04.30 PM)
Mon	DM	DM Lab			LUNCH BREAK	MCCP-I		
Tue	CN	CN Lab				ACD	APTITUDE	
Wed	EE		CN	CN		DM	ACD	AI
Thu	ACD	FSD-2				AI	CN	DM
Fri	AI	MCCP-I				DM	ACD	LIBRARY
Sat	DM	AI	AI	FSD-2		ACD	CN	SPORTS

Section: D **Class Coordinator:** Mr. G. Deepak Pavan Kumar **Room No:** G-303

Periods	1	2	3	4	1:00PM 2:00PM	5	6	7
Time / Day	(09.30 AM-10.30 AM)	(10.30 AM-11.20 AM)	(11.20 AM-12.10 PM)	(12.10 PM-01.00 PM)		(02.00 PM-02.50 PM)	(02.50 PM-03.40 PM)	(03.40 PM-04.30 PM)
Mon	ACD	CN	CN	LIBRARY	LUNCH BREAK	MCCP-I		
Tue	AI	DM	APTITUDE			FSD-2		
Wed	DM	AI	AI	ACD		EE		DM
Thu	CN	CN Lab				DM	ACD	AI
Fri	CN	MCCP-I				AI	FSD-2	SPORTS
Sat	ACD	ACD	CN	DM		DM Lab		

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Staff Details:

S. No.	Course Code	Course Name	A	B	C	D
1.	V23CST09	Data Ware housing and Data Mining (**DW & DM**)	Mrs. N. Hiranmayee	Mrs.N. Hiranmayee	Mrs.D.S L Manikanteswari	Mrs.D.S L Manikanteswari
2.	V23CST10	Computer Networks (**CN**)	M V V Gopala Krishna Murthy	Mr. Syed Akheel Hassan Gori	Mr. S. Kumar Reddy Mallidi	Mr. S. Kumar Reddy Mallidi
3.	V23CST11	Automata and Compiler Design (**ACD**)	Ms.Ch N Padma Latha	Ms.Ch N Padma Latha	Mr. G.Sriram Ganesh	Mr. G.Sriram Ganesh
4.	V23CSTPE02	**Professional Elective-I** Artificial Intelligence (**AI**)	Mrs. Y DivyaVani	Dr. Adidela Daveedu Raju	Dr. Adidela Daveedu Raju	Dr. Adidela Daveedu Raju
5.	V23CSL08	Data Mining Lab (**DM Lab**)	Mrs. N. Hiranmayee / Mr. S. Kumar Reddy Mallidi	Mrs. N. Hiranmayee / Mr. P Rammohan Rao	Mrs. D. S L Manikanteswari / Mrs. A. Naga Jyothi	Mrs. D. S L Manikanteswari / Mrs. Y Sunitha
6.	V23CSL09	Computer Networks Lab (**CN Lab**)	M V V Gopala Krishna Murthy / Mr. K Praveen Kumar	Mr. Syed Akheel Hassan Gori / Mr. G Sriram Ganesh	Mr. S. Kumar Reddy Mallidi / Dr. A Daveed Raju	Mr. S. Kumar Reddy Mallidi / Mrs. M N V Surekha
7.	V23CSSE03	**Skill enhancement Course:** Full Stack development-2 (**SEC**)	Mr. T. Nava Krishna / Mr. G. Deepak Pavan Kumar	Mr. G. Deepak Pavan Kumar / Mr. T. Nava Krishna	Mr. T. Nava Krishna / Mr. G. Deepak Pavan Kumar	Mr. G. Deepak Pavan Kumar / Mr. T. Nava Krishna
8.	V23CSES01	Master Coding and Competitive Programming - Part-1(**MCCP-I**)	Dr. V Venkateswara Rao / Mr. B Bhasker Murali Krishna	Dr. V Venkateswara Rao / Mr. B Bhasker Murali Krishna	Dr. V Venkateswara Rao / Mrs.A Neelima	Dr. V Venkateswara Rao / Mrs.A Neelima
9.	V23ENT04	English for Employability(**EE**)	Ms. A Kiranmayee	Mr. M Venkata Ramana	Mr. G Srinivasa Rao	Dr. B Ananda Rao
		Aptitude	Mr. J N V Somayajulu	Mr. T H S Srinivas	Mr. J N V Somayajulu	Mr. T H S Srinivas

LabVenues:

S. No.	Name of the Lab	Lab Venue
1	Data Mining Lab (**DM Lab**)	JAMES GOSLING Lab (CSE-B Block Ground Floor)
2	Computer Networks Lab (**CN Lab**)	
3	Full Stack development-2 (**FSD-2**)	Orange Seminar Hall (**Students should Carry Laptops during these Sessions**)
4	Master Coding and Competitive Programming - Part-1 (**MCCP-I**)	Yellow Seminar Hall (**Students Student Carry Laptops during these Sessions**)

Head of the Department

COURSE STRUCTURE

V – SEMESTER

S.No.	Course Code	Name of the Course		L	T	P	C
1	V23CST09	Data Warehousing and Data Mining	PCC	3	0	0	3
2	V23CST10	Computer Networks	PCC	3	0	0	3
3	V23CST11	Automata and Compiler Design	PCC	3	0	0	3
4	**Professional Elective-I**		PEC	3	0	0	3
	V23CSTPE01	1. Object Oriented Analysis and Design					
	V23CSTPE02	2. Artificial Intelligence					
	V23CSTPE03	3. Microprocessors & Microcontrollers					
	V23CSTPE04	4. Quantum Computing					
		5. 12 week MOOC Swayam/NPTEL course recommended by the BoS					
5	**Open Elective -I**		OEC	3	0	0	3
		Offline / 12 week MOOC Swayam/NPTEL course recommended by the BoS					
		Entrepreneurship Development & Venture Creation					
6	V23CSL08	Data Mining Lab	PCC	0	0	3	1.5
7	V23CSL09	Computer Networks Lab	PCC	0	0	3	1.5
8	V23CSSE03	Full Stack development-2	SEC	0	1	2	2
9	**Engineering Science Course**		ESC	0	0	2	1
	V23CSES01	Master Coding and Competitive Programming - Part-1					
	V23CSES02	User Interface Design using Flutter					
		SWAYAM Plus - Android Application Development (with Flutter)					
10	V23CSP01	Evaluation of Community Service Internship	CSI	-	-	-	2
11	V23ENT04	English for Employabilité (EE)		-	-	-	-
			Total	15	01	10	23
		Minor Course (Student may select from the same specialized minors pool)	MC	3	0	0	3
		Minor Course (Student may select from the same specialized minors pool)	MC	3	0	0	3
		Honors Course (Student may select from the same honors pool)	HC	3	0	0	3
		Honors Course (Student may select from the same honors pool)	HC	3	0	0	3

LESSON PLANS

Data warehouse and Data Mining

Academic Year : 2025-26   **Programme: B.Tech**
Semester : V   **Sections :A,B,C & D**
Name of the Course: Data warehouse and Data Mining   **Course Code: V23CST9**

COURSE OUTCOMES (Along with Knowledge Level): After completion of this course, the students will be able to:

S. No.	Co No.	Course Outcome	Knowledge Level
1.	CO1	Describe Operating System Services and System Calls	K2
2.	CO2	Illustrate Process Management Concepts and CPU Scheduling Algorithms	K3
3.	CO3	Demonstrate Process Synchronization primitives and Process Deadlocks	K3
4.	CO4	Illustrate Memory Management Techniques and Page Replacement Algorithms	K3
5.	CO5	Describe File System Concepts and Mass Storage Structures	K2

Text Books:

1.   Operating System Concepts, Abraham Silberschatz, ,Peter Baer Galvin, Greg Gagne, 9th Edition, John Wiley and Sons Inc., 2012

Reference Books:

1.   Data Mining: VikramPudi and P. Radha Krishna, Oxford Publisher.

2.   Data Mining Techniques, Arun K Pujari, 3rd edition, Universities Press,2013.

3.   (NPTEL course by Prof.PabitraMitra) http://onlinecourses.nptel.ac.in/noc17_mg24/preview

4.   http://www.saedsayad.com/data_mining_map.htm

Targeted Proficiency and attainment Levels (for each Course Outcome):

Cos		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		60	60	60	60	60
Targeted level of Attainment	**Level 3**	60	60	60	60	60
	Level 2	55	55	55	55	55
	Level 1	50	50	50	50	50

Lecture Plan:

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Dissemination of Department Vision, Mission, PEOs, POs, PSOs, COs, Introduction on DBMS and its Applications	K1	1	Lecture	BB
2		Discuss Basic concepts	K1	1	Lecture	IFB
3		Describe Data Warehouse Modeling: Data Cube and OLAP,	K1	2	Lecture with Discussion	IFB
4		Explain Data Warehouse Design and Usage	K2	1	Lecture	IFB
5	CO 1	Explain Data Warehouse Implementation, Cloud Data Warehouse	K2	1	Lecture with Discussion	IFB
6		Discuss Data Mining and Patten Mining	K1	1	Lecture with Discussion	IFB
8		Describe Major issues, Data Objects & Attribute Types	K2	2	Lecture with Discussion	IFB
9		Explain Basic Statistical Descriptions of Data	K2	2	Lecture with Discussion	IFB
10		Discuss Data Visualization	K1	2	Lecture	IFB
11		Explain Measuring Data Similarity and Dissimilarity.	K2	2	Lecture With Discussion	IFB
		TOTAL		**15**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		An Overview	K2	2	Lecture With Discussion	IFB
2	CO 2	Data Cleaning	K2	2	Lecture With Discussion	IFB
3		Data Integration	K3	2	Lecture With Discussion	IFB

S. No		Intended Learning Outcomes	Knowledge Level	No. of Hours	Pedagogy	Teaching aids
4		Data Reduction	K3	2	Lecture With Discussion	IFB
5		Data Transformation	K3	2	Lecture With Discussion	IFB
6		Data Discretization	K3	2	Lecture With Discussion	IFB
		TOTAL		**12**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Explain the Basic Concepts	K2	1	Lecture with Demonstration	IFB
2		Illustrate General Approach to solving a classification problem	K3	1	Lecture with Demonstration	IFB
3		Decision Tree Induction: Attribute Selection Measures	K3	1	Lecture with Demonstration	IFB
4		Tree Pruning, Induction	K3	2	Lecture with Demonstration	IFB
5		Scalability and Decision Tree	K3	1	Lecture with Demonstration	IFB
6	**CO 3**	Visual Mining for Decision Tree Induction	K3	1	Lecture with Demonstration	IFB
7		Bayesian Classification Methods	K3	2	Lecture with Demonstration	IFB
8		Bayes Theorem,	K3	1	Lecture With Discussion	IFB
9		Naïve Bayes Classification	K3	2	Lecture With Discussion	IFB
10		Rule-Based Classification	K3	1	Lecture With Discussion	IFB
11		Model Evaluation and Selection.	K3	1	Lecture With Discussion	IFB
		TOTAL		**14**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Problem Definition	K3	1	Lecture With Discussion	IFB
2		Frequent Item set Generation	K3	1	Lecture With Discussion	IFB
3		Rule Generation: Confident Based Pruning	K3	2	Lecture With Discussion	IFB
4	**CO 4**	Rule Generation in Apriori Algorithm,	K3	2	Lecture With Discussion & Seminar	IFB
5		**Improving the efficiency of Apriori**	K3	1	Lecture With Discussion	IFB
7		Compact Representation of frequent item sets,	K3	1	Lecture With Discussion	IFB
8		FP-Growth Algorithm.	K3	1	Lecture	IFB
		TOTAL		**9**		

S .No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Overview	K2	1	Lecture With Discussion	ICT
2		Basics and Importance of Cluster Analysis	K2	1	Lecture With Discussion	ICT
3	**CO 5**	Clustering techniques	K2	1	Lecture With Discussion	ICT
4		Different Types of Clusters; K-means	K2	2	Lecture With Discussion	ICT
5		The Basic K-means Algorithm,	K2	1	Lecture With Discussion	ICT
6		K-means Additional Issues, Bi-secting K Means	K2	1	Lecture With Discussion	ICT

7		Hierarchical Clustering: Basic Agglomerative Hierarchical Clustering Algorithm	K3	1	Lecture With Discussion	ICT
8		DBSCAN: Traditional Density Center-Based Approach .	K3	1	Lecture With Discussion	ICT
9		DBSCAN Algorithm, Strengths and Weaknesses	K3	1	Lecture With Discussion	ICT
		TOTAL		**12**		

Total No. of Classes:60

Computer Networks

Academic Year : 2025-26   **Programme: B.Tech**

Year/ Semester : V Sem   **Section:A, B, C & D**

Name of the Course: Computer Networks   **Course Code:** V23CST10

Course Outcomes (Along with Knowledge Level): After completion of this course, the students will be able to:

S. No.	CO No.	Course Outcome	BTL
1	CO1	Illustrate fundamentals of networks, Reference Models and Transmission Media.	K2
2	CO2	Demonstrate Error Detection & Correction and Data Link Layer protocols.	K3
3	CO3	Illustrate the protocols of MAC sublayer and Channelization.	K2
4	CO4	Utilize connection and connectionless services and Apply Routingand Congestion Control Algorithms.	K3
5	CO5	Explain Transport Layer and Application Layer protocols	K2

Text Books:
1. Computer Networks, Andrew S Tanenbaum, Fifth Edition. Pearson Education/PHI
2. Data Communications and Networks, Behrouz A. Forouzan, Fifth Edition TMH.

Reference Books:

1. Data Communications and Networks- Achut S Godbole, AtulKahate, 2nd Edition, McGrawHill
2. Computer Networks, Mayank Dave, 1st Edition, CENGAGE.
3. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.

Targeted Proficiency and attainment Levels (for each Course Outcome):

COs		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		60	60	60	60	60
Targeted level of Attainment	**Level 3**	65	65	65	65	65
	Level 2	60	60	60	60	60
	Level 1	50	50	50	50	50

Lecture Plan

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours required	Pedagogy	Teaching aids
1		Dissemination of Department Vision, Mission, PEOs, POs, PSOs	-	-	-	
		Outline the concept of computer networks and basic definitions.	K1	1	Lecture	PPT
2		List different types of computer networks (LAN, MAN, WAN).	K1	1	Lecture	PPT
3		Classify network topologies and identify their structural patterns.	K2	1	Lecture	PPT
4		Compare network topologies based on performance and reliability.	K2	1	Gamification	PPT, Quiz Platform
5	**CO 1**	**State** the layers in the OSI and TCP/IP reference models.	K1	1	Lecture With Discussion	PPT
6		**Explain** the functions of each layer in the OSI and TCP/IP models.	K2	2	Lecture With Discussion	Animations &WB
7		**Differentiate** the OSI and TCP/IP models with respect to architecture and services.	K2	1	Case-Based Teaching	PPT
8		**Describe** types of guided media and their characteristics.	K2	2	Lecture With Discussion	Cable Samples, PPT
9		**Explain** the features and examples of unguided media.	K2	1	Inquiry Based	Q&A (Images, Use Cases)
		Total Hours		**11**		

S. No	Course Outcome	Intended Learning Outcomes(ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define design issues and services of the data link layer.	K1	1	Lecture	PPT
2		Describe the concepts of framing and distinguish between fixed and variable size framing.	K2	1	Lecture	PPT
3	**CO 2**	Explain flow control and error control mechanisms in the data link layer.	K2	2	Lecture With Discussion	PPT
4		Illustrate error detection using CRC and internet checksum.	K3	2	Case-Based Teaching	CRC Examples, Problem Sheets
5		Compare error correction techniques and detection codes.	K2	1	Lecture With Discussion	PPT

S. No		Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
6		Demonstrate elementary protocols: simplex, stop-and-wait, and noisy channel.	K3	2	Lecture With Discussion	PPT
7		Apply sliding window protocols: one-bit, Go-Back-N, Selective Repeat.	K3	2	Active Learning	Frame Sequence Simulation
8		Discuss stop-and-wait protocol in real-time communication.	K2	1	Inquiry-Based Learning	Case Prompt
9		Explain HDLC features and working mechanisms.	K2	1	Lecture With Discussion	PPT
10		Summarize PPP and contrast it with HDLC in terms of framing and control.	K2	1	Lecture With Discussion	PPT
	Total Hours			**14**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		List random access protocols and describe ALOHA and its variants.	K2	2	Lecture With Discussion	PPT
2		Explain CSMA, CSMA/CD, and CSMA/CA with timing diagrams.	K2	2	Lecture With Discussion	PPT
3		Describe controlled access techniques: reservation, polling, and token passing.	K2	2	Peer Instruction	Role-play with tokens, Flowcharts
4		Compare the behavior of random and controlled access schemes.	K2	1	Lecture With Discussion	PPT
5	**CO 3**	List and explain channelization techniques: FDMA, TDMA, CDMA.	K2	2	Lecture With Discussion	PPT
6		Differentiate between TDMA and FDMA	K2	1	Blended Learning	PPT
7		State the standards of Ethernet and describe the Ethernet frame structure.	K1	1	Lecture With Discussion	PPT
8		Explain the features of Standard, Fast, Gigabit, and 10-Gigabit Ethernet.	K2	2	Lecture With Discussion	PPT
9		Summarize MAC and Ethernet concepts through review and discussion.	K2	1	Collaborative Learning	Summary Slides
	Total Hours			**14**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define network-layer design issues and store-and-forward packet switching.	K1	1	Lecture With Discussion	PPT & WB
2		Explain services to the transport layer and differentiate connectionless vs. connection-oriented implementations.	K2	2	Lecture With Discussion	PPT
3		Compare virtual-circuit and datagram networks on setup, state, and failure behavior.	K2	1	Lecture With Discussion	PPT
4		Apply the Optimality Principle to compute shortest-path routing tables.	K3	2	Active Learning	Exercise sheet
5		Explain flooding, distance-vector, and link-state routing algorithms with timing diagrams.	K2	2	Lecture With Discussion	PPT
6	CO 4	Demonstrate hierarchical routing with multi-level network topology examples.	K3	1	Lecture With Discussion	PPT
7		Demonstrate tunnelling concepts for internetwork routing scenarios	K3	1	Lecture With Discussion	PPT
8		Demonstrate leaky-bucket and token-bucket congestion-control algorithms using step-by-step timelines.	K3	1	Lecture With Discussion	PPT
9		Compute subnet masks and CIDR blocks for given IPv4 addresses and identify key IPv4 header fields.	K3	2	Blended Learning	PPT & Address-calculation worksheet
10		Explain the main IPv6 header and compare IPv4 vs IPv6 plus transition mechanisms.	K2	2	Lecture With Discussion	Side-by-side header diagrams, transition flowchart
11		Describe IP fragmentation and reassembly across heterogeneous networks.	K2	1	Collaborative Learning	Animation, group discussion prompts
	Total			**16**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		List transport layer services and port numbers.	K1	1	Lecture With Discussion	PPT
2		Describe UDP protocol, its segment structure, and services.	K2	1	Lecture With Discussion	PPT
3		Explain UDP applications and typical use cases.	K2	1	Case-Based Teaching	PPT
4		Describe TCP protocol, features, and segment structure.	K2	2	Lecture With Discussion	PPT
5		Explain TCP connection establishment, windows, and flow control.	K2	2	Lecture With Discussion	Whiteboard
6	CO 5	Explain error control and congestion control in TCP.	K2	1	Lecture With Discussion	PPT, Whiteboard
7		List major application layer protocols (HTTP, email, TELNET, DNS).	K1	1	Lecture With Discussion	PPT
8		Describe HTTP architecture and web-based email workflow.	K2	1	Lecture With Discussion	PPT
9		Explain TELNET usage.	K2	1	Case-Based Teaching	PPT & Putty Tool Demo
10		Describe DNS architecture and its role in internet communication.	K2	1	Collaborative Learning	PPT
		Total		**12**		

Total No of Classes: 72

24

Automata and Compiler Design

Academic Year: 2025-26   **Programme: B.Tech**
Year/ Semester: V   **Section: A,B,C&D**
Name of the Course: Automata and Compiler Design   **Course Code : V23CST11**

Course Outcomes (Along with Knowledge Level): After successful completion of course the student will able to

S. No.	CO No.	Course Outcome	BTL
1.	CO1	Construct Finite Automata and Regular Expressions.	K3
2.	CO2	Describe the compilation process and lexical analyzer	K2
3.	CO3	Construct Top down and Bottomup parsing Techniques	K3
4.	CO4	Produce intermediate code generation process and run time environments	K3
5.	CO5	Explain the code optimization and code generation process.	K2

Text Books:

1.   Introduction to Automata Theory, Languages and Computation J.E.Hopcroft, Motwani and J.D.Ullman, 3rd Edition,Pearson,2008.
2.   Compilers, Principles Techniques and Tools- Alfred V Aho, Monica S Lam, Ravi Sethi, Jeffrey D. Ullman, 2nded, Pearson,2007.

Reference Books:

1. Louden:―CompilerConstruction,Principles&Practice‖,1stEdition,ThomsonPress,2006.

2. TremblayJP,SorensonGP:―TheTheory&PracticeofCompilerwriting,1stEdition,BSPPublication,2010.

3. Theory of Computation,V.Kulkarni, Oxford UniversityPress,2013

Targeted Proficiency and attainment Levels (for each Course Outcome):

COs		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		60	60	60	60	60
Targeted level of Attainment	**Level 3**	60	60	60	60	60
	Level 2	50	50	50	50	50
	Level 1	40	40	40	40	40

Lecture Plan:

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
		Dissemination of Vision, Mission, PEOs,POs,PSOs		**1**		IFP
1.		Describe Alphabet, Strings and Languages	K1	1	Lecture with discussion	IFP
2.		Explain Finite Automata	K2	2	Lecture with discussion	IFP
3.		Construct DFA's & NFA's	K3	3	Lecture with demonstration	IFP
4.	**CO1**	Explain Equivalence between NFA and DFA	K2	1	Lecture with demonstration	IFP
5.		Demonstrate Equivalence between NFA and ∈-NFA	K3	2	Lecture with demonstration	IFP
6.		Construct Regular Expressions	K3	1	Lecture with demonstration	IFP
7		Explain Equivalence between Regular Expressions and Finite Automata.	K3	2	Lecture with demonstration	IFP
8		Demonstrate Chomsky's Hierarchy	K3	1	Lecture with demonstration	IFP
Total Hours				**14**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.		Describe Compiler	K1	1	Lecture with discussion	IFP
2.		Explain the Structure of a Compiler	K2	2	Lecture with discussion	IFP
3.		Explain The Role of the Lexical Analyzer	K2	2	Lecture with demonstration	IFP
4.		Define Specification of Tokens	K1	1	Lecture with demonstration	IFP
5.	**CO2**	Describe Recognition of Tokens	K1	1	Lecture with demonstration	IFP
6.		Describe Lexical-Analyzer Generator Lex	K2	2	Lecture with demonstration	IFP
7		Define Context Free Grammar	K1	1	Lecture with discussion.	IFP
8		Explain Derivation and types	K2	2	Lecture with demonstration	IFP
9		Explain Derivation Trees	K2	1	Lecture with demonstration	IFP

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
10		Describe Ambiguous Grammar	K1	1	Lecture with demonstration	IFP
11		Explain Elimination of Left Recursion and Left Factoring	K2	2	Lecture with demonstration	IFP
	Total Hours			**16**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.		Construct Top-Down Parsing: Recursive Descent Parsing	K3	2	Lecture with discussion	IFP
2.		Construct First and Follow	K3	2	Lecture with demonstration	IFP
3.		Construct LL(1) Grammars	K3	2	Lecture with demonstration	IFP
4.		Construct Bottom-Up Parsing	K3	2	Lecture with demonstration	IFP
5.		Demonstrate Error Recovery in PredIFPive Parsing.	K3	1	Lecture with demonstration	IFP
6.		Explain Bottom-Up Parser Classifications	K2	1	Lecture with demonstration	IFP
7	CO3	Explain Handle Pruning	K2	1	Lecture with demonstration	IFP
8.		Explain Shift-Reduce Parsing	K2	1	Lecture with demonstration	IFP
9.		Construct SLR Parsing Tables	K3	2	Lecture with demonstration	IFP
10		Construct CLR (1)	K3	2	Lecture with demonstration	IFP
11		Construct LALR Parsing Tables	K3	2	Lecture with demonstration	IFP
12		Complete comparison of all Bottom-up approaches	K3	1	Lecture with demonstration	IFP
	Total Hours			**19**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.		Define Semantic Analysis: Syntax Directed Definitions	K2	1	Lecture with discussion	IFP
2.		Explain Evaluation Orders for SDD's	K2	1	Lecture with discussion	IFP
3.	CO4	Describe Intermediate Code Generation	K2	1	Lecture with demonstration	IFP
4.		Explain Variants of Syntax Trees	K2	2	Lecture with discussion	IFP

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
5.		Explain Three-Address Code	K2	1	Lecture with demonstration	IFP
6.		Explain Basic Blocks and Flow Graph.	K2	2	Lecture with demonstration	IFP
7.		Demonstrate Control Flow	K3	1	Lecture with demonstration	IFP
8.		Explain Run-Time Environments: Storage Organization	K2	1	Lecture with demonstration	IFP
9.		Illustrate Stack Allocation of Space	K3	1	Lecture with demonstration	IFP
10.		Illustrate Heap Management	K3	1	Lecture with demonstration	IFP
Total Hours				**12**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.		Explain Machine Independent Optimization	K2	1	Lecture with discussion	PPT
2.		Explain the Principal Sources of Optimizations	K2	1	Lecture with discussion	PPT
3		Describe the optimization of Basic blocks.	K1	1	Lecture with discussion	IFP
4		Explain Peephole Optimization	K2	1	Lecture with discussion	PPT
5	CO5	Describe Data flow Analysis	K1	1	Lecture with discussion	IFP
6.		Explain the Issues in design of code generation.	K2	1	Lecture with discussion	PPT
7.		Explain target Language and Address in the target code	K2	2	Lecture with demonstration	PPT
8.		Describe a Simple Code generation	K2	1	Lecture with demonstration	PPT
Total Hours				**09**		

Total No Of Classes: 70

Mastering Coding and Competitive Programming

Academic Year: 2025-26   **Programme: B.Tech**

Year/ Semester: V   **Section: A,B,C&D**

Name of the Course: Mastering Coding and Competitive Programming-1

Course Code :   V23CSES01

Course Outcomes (Along with Knowledge Level): After successful completion of course the student will able to

S. No.	CO No.	Course Outcome	BTL
1.	CO1	Apply Mathematical reasoning and number theory to solve real world problems in linear time.	K3
2.	CO2	Use of modular arithmetic, to solve complex problems in linear time, logarithmic.	K3
3.	CO3	Use of Prime Factorization and complex solve problems.	K3
4.	CO4	Analyse different techniques including sieve to find prime numbers and evaluate efficiency of these methods.	K4
5.	CO5	Experiment with Hashing and searching techniques to solve problems on Arrays in Linear time.	K3

Textbooks:

1. Java The Complete Reference – Eleventh Edition, Herbert Schildt, Oracle.
2. Guide to Competitive Programming by Antti Laaksonen
3. Programming Challenges by Steven's Skiena

Tools:

1. practice.geeksforgeeks.com
2. leetcode.com
3. codingninjas.com
4. hackerrank.com
5. interviewbit.com

Targeted Proficiency and attainment Levels (for each Course Outcome):

COs		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		80	80	80	80	80
Targeted level of Attainment	**Level 3**	80	80	80	80	70
	Level 2	70	70	70	70	65
	Level 1	60	60	60	60	60

Lecture Plan:

S. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours required	Pedagogy	Teaching aids
1.	**CO1**	Develop Programs to solve problems based on Mathematical logic, Reasoning and number theory	K3	10	Lecture With Discussion	ICT
2.	**CO2**	Develop programs using different techniques to find prime number	K3	10	Lecture With Discussion	ICT
3.	**CO3**	Develop programs using Sieve method and optimize Complexity of finding prime number	K3	12	Lecture With Discussion	ICT
4.	**CO4**	Develop programs based on series, patterns and	K4	16	Lecture With Discussion	ICT
		Develop programs on concept of Fibonacci series	K3			
		Develop programs on strings including palindrome and anagram concepts	K3			
5.	**CO5**	Develop programs to search pattern in a string	K3	12	Lecture With Discussion	ICT
		Demonstrate DDL, DML commands and queries	K2			

Total No Of Classes:60

30

Artificial Intelligence

Academic Year: 2025-26   **Programme: B.Tech**
Year/ Semester: V   **Section: A,B,C&D**
Name of the Course: Artificial Intelligence   **Course Code : V23CSTPE02**

Course Outcomes (Along with Knowledge Level): After successful completion of course the student will able to

CO	Course Outcomes	Knowledge Level
1	Understand the fundamental concepts of Artificial Intelligence.	K2
2	Employ various search strategies and game-playing algorithms to solve AI problems.	K3
3	Apply knowledge representation techniques and probabilistic reasoning methods to model AI systems.	K3
4	Use logic based inference techniques and learning methods for intelligent decision- making.	K3
5	Demonstrate the principles of expert system architecture and knowledge acquisition in AI applications.	K3

Text Books:

1.   Artificial Intelligence : A Modern Approach, Stuart J. Russell and Peter Norvig, 3rd Edition, PrenticeHall.
2.   Artificial Intelligence, Elaine Rich,Kevin Knight, Shivashankar B Nair, 3rd Edition,Tata McGraw-Hill.

Reference Books:
1.   Artificial Intelligence, George F Luger, Pearson Education Publications.
2.   Artificial Intelligence, Saroj Kaushik, 1st Edition, Cengage Learning.

Targeted Proficiency and Attainment Levels (for each course Outcome):

COs		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		60	60	60	60	60
Targeted level of Attainment	Level 3	60	60	60	60	60
	Level 2	50	50	50	50	50
	Level 1	40	40	40	40	40

Lecture Plan:

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours required	Pedagogy	Teaching aids
1		Dissemination of Department Vision, Mission, PEOs, POs, PSOs	-	-	-	
		Explain AI Introduction	K2	1	Lecture With Discussion	BB/ICT
2		Explain what is AI	K2	1	Blended Learning	BB/ICT
3		Explain AI problems	K2	2	Lecture With Discussion	BB/ICT
4		Discuss foundations of AI	K2	2	Lecture With Discussion	BB/ICT
5	CO 1	Discuss history of AI	K2	2	Lecture With Discussion	BB/ICT
6		Describe agents, environments	K2	1	Lecture With Discussion	BB/ICT
7		Discuss the concept of rationality	K2	1	Lecture With Discussion	BB/ICT
8		Discuss the nature of environments	K2	1	Lecture With Discussion	BB/ICT
9		Discuss the Structure of agents	K2	2	Lecture With Discussion	BB/ICT
10		Discuss Problem solving agents	K2	2	Flipped class rrom	BB/ICT
11		Describe problem formulation	K2	1	Lecture With Discussion	BB/ICT
		Total Hours		**16**		

S. No	Course Outcome	Intended Learning Outcomes(ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Illustrate Searching for solutions	K3	2	Lecture with Discussion and in class Assignment	BB/ICT
2		Explain Uniformed search strategies– Breadth first search, depth first Search.	K2	3	Lecture with Discussion and in class Assignment	BB/ICT
3		Explain Search with partial information (Heuristic search)	K2	2	Lecture with Discussion	BB/ICT
4		Discuss Hill climbing, A* ,AO* Algorithms	K2	2	Lecture with Discussion	BB/ICT
5	CO 2	Illustarte Problem reduction	K3	1	Lecture with Discussion	BB/ICT
6		Illustrate Game Playing-Adversial search	K3	1	Lecture with Discussion	BB/ICT
7		Describe Games, mini-max algorithm	K2	2	Lecture with Discussion	BB/ICT
8		Explain optimal decisions in multiplayer games,	K2	1	Lecture with Discussion	BB/ICT
9		Discuss Problem in Game playing, Alpha-Beta pruning,	K2	2	Lecture with Discussion	BB/ICT
10		Explain Evaluation functions	K2	1	Lecture with Discussion	BB/ICT
		Total Hours		**17**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Discuss Knowledge representation issues	K2	2	Lecture with Discussion	BB/ICT
2		Discuss predicate logic- logic programming	K2	1	Lecture with Discussion	BB/ICT
3		Describe semantic nets- frames and inheritance	K2	2	Lecture with Discussion	BB/ICT
4		Describe constraint propagation	K2	1	Lecture with Discussion	BB/ICT
5	CO3	Describe representing knowledge using rules	K2	2	Lecture with Discussion	BB/ICT
6		Illustarterules based deduction systems.	K2	2	Lecture with Discussion	BB/ICT
7		Discuss Reasoning under uncertainty	K2	1	Lecture with Discussion	BB/ICT
8		Explain review of probability, Bayes" probabilistic interferences	K2	2	Lecture with Discussion	BB/ICT
9		Illustrate Dempster-Shafer Theory (DST)	K3	2	Lecture with Discussion	BB/ICT
		Total Hours		**15**		

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Discuss Introduction to First Order Logic (FOL) – syntax, semantics	K2	1	Lecture with Discussion	BB/ICT
2		Demonstrate Inference in First Order Logic	K3	2	Lecture with Discussion	BB/ICT
3		Explain Propositional vs. First Order Inference	K2	1	Lecture with Discussion	BB/ICT
4	CO4	Discuss Unification and Lifting	K2	2	Lecture with Discussion	BB/ICT
5		Explain Forward Chaining Algorithm	K2	2	Lecture with Discussion	BB/ICT
6		Illustrate Backward Chaining Algorithm	K3	2	Case-Based Teaching	BB/ICT

7		Illustrate Resolution Method	K2	1	Lecture with Discussion	BB/ICT
8		Interpret Learning from Observation and Inductive Learning	K3	2	Lecture with Discussion	BB/ICT
9		Discuss Resolution	K2	2	Lecture with Discussion	BB/ICT
10		Illustrate Decision Trees (e.g., ID3 algorithm)	K3	2	Lecture with Discussion	BB/ICT
11		Describe Explanation-Based Learning	K2	1	Lecture with Discussion	BB/ICT
12		Explain Statistical Learning Methods (introductory overview)	K2	1	Flipped classroom	BB/ICT
13		Explain Reinforcement Learning: concept of reward and policy	K2	2	Lecture with Discussion	BB/ICT
14		**Total Hours**		**21**		

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Describe the architecture of expert systems	K2	2	Lecture with Discussion	BB/ICT
2		Describe the roles and significance of expert systems in AI applications	K2	1	Lecture with Discussion	BB/ICT
3		Illustrate the process of knowledge acquisition in expert systems	K3	2	Lecture with Discussion	BB/ICT
4	**CO5**	Describe the concept of meta-knowledge in expert systems	K2	2	Lecture with Discussion	BB/ICT
5		Describe the role of heuristics in expert system reasoning	K2	2	Lecture with Discussion	BB/ICT
6		llustrate typical expert systems – MYCIN, DART, XCON	K3	2	Case-Based Teaching	BB/ICT
7		Describe expert system shells and their use in development	K2	2	Flipped Classroom + Demo Session	BB/ICT
		Total Hours		**13**		

Total No Of Classes:60

Data Mining Lab

Academic Year: 2025-26   **Programme: B.Tech**
Year/ Semester: V   **Section: A,B,C,D**
Name of the Course: Data Mining Lab   **Course Code : V23CSL08**

Course Outcomes (Along with Knowledge Level): After successful completion of course the student will able to

CO	Course Outcomes	Knowledge Level
1	Describe Conceptual, Logical, and Physical design of Data Warehouses OLAP applications andOLAP deployment	K2
2	Develop a data warehouse or data mart to present information needed by management in a formthat is usable.	K3
3	Practice hands-on experience working with all real data sets.	K3
4	Compute real data sets using popular data mining tools such as WEKA, Python Libraries.	K3
5	Develop ability to design various algorithms based on data mining tools.	K3

Targeted Proficiency and Attainment Levels (for each course Outcome):

COs		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		75	75	75	75	75
Targeted level of Attainment	Level 3	70	70	70	70	70
	Level 2	65	65	65	65	65
	Level 1	60	60	60	60	60

Lecture Plan:

S. No.	Course Outcomes (COs)	Intended Learning Outcomes (ILO)	Knowledge Level (K-Level)	No. of Hours	Pedagogy	Teaching Aids / Tools
1.		Illustrate the creation of a Data Warehouse	K3	3	Lab-Based Learning	Pentaho/MS-SSIS
2.	CO1, CO2	Build DW/Data Mart using tools, design schemas (Star, Snowflake, Fact), develop ETL, OLAP operations	K3	3	Lab-Based Learning	Pentaho/MS-SSIS
3.		Explore WEKA toolkit, understand ARFF format, visualize datasets	K3	3	Lab-Based Learning	WEKA
4.		Preprocess data and perform association rule mining using Apriori	K3	3	Lab-Based Learning	WEKA/Python
5.		Perform classification using ID3, J48, Naïve Bayes, k-NN; evaluate performance	K3	3	Lab-Based Learning	WEKA/Python
6.	CO3	Perform clustering using k-Means and visualize results	K3	3	Lab-Based Learning	WEKA/R
7.		Knowledge Flow layout with Apriori, J48, Random Forest; ROC plotting	K3	3	Lab-Based Learning	WEKA
8.		ZeroR technique demonstration on Iris dataset	K3	3	Lab-Based Learning	WEKA
9.		Develop Java program to simulate dataset	K3	3	Lab-Based Learning	Java
10.		Python program to perform Apriori algorithm	K3	3	Lab-Based Learning	Python
11.	CO4	Develop a program to calculate chi-square value using Python/R. Report your observation.	K3	3	Lab-Based Learning	Python

12.		Develop a program of Naive Bayesian classification using Python/R programming language.	K3	3	Lab-Based Learning	Python
13.		Implement a Java/R program to perform Apriori algorithm	K3	3	Lab-Based Learning	Java/ R - Programming
14.		Develop a R program to cluster your choice of data using simple k-means algorithm using JDK	K3	3	Lab-Based Learning	R - Programming
15.		Develop a program of cluster analysis using simple k-means algorithm Python/R programming language.	K3	3	Lab-Based Learning	Python/ R- Programming
16.	**CO5**	Develop a program to compute/display dissimilarity matrix (for your own dataset containing atleast four instances with two attributes) using Python	K3	3	Lab-Based Learning	Python/R - Programming
		Visualize the datasets using matplotlib in python/R.(Histogram, Box plot, Bar chart, Pie chart etc.,)	K3	3	Lab-Based Learning	Python/R - Programming

Total No. Of Classes: 45

Computer Networks Lab

LESSON PLAN

COURSE OUTCOMES (Along with Knowledge Level): After completion of this course, the students will be able to:

CO	Course Outcomes	Knowledge Level
CO1	Develop programs on data link layer framing methods and checksum.	K3
CO2	Develop programs to implement Error detection technique and Sliding window protocol.	K3
CO3	Develop programs to implement Routing and Congestion Control Algorithms.	K3
CO4	Demonstrate various networking tools like Wireshark, NS2 and Nmap.	K3

Targeted Proficiency and Attainment Levels (for each Course Outcome):

COs		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		75	75	75	75	75
Targeted level of Attainment	**Level 3**	70	70	70	70	70
	Level 2	65	65	65	65	65
	Level 1	60	60	60	60	60

Lecture Plan:

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1.	**CO 1**	*Develop* a program to implement data link layer character and bit stuffing.	K3	3	Lab-Based Learning	PPT Computer with C
2.		*Develop* a program to compute and verify data link layer frame checksum.	K3	3	Lab-Based Learning	PPT Computer with C
1.	**CO 2**	Implement Hamming Code for error detection and correction in a given	K3	3	Lab-Based Learning	PPT Computer with C

		data sequence				
2.		Implement CRC algorithms (CRC12, CRC16, CRC CCIP) for error detection on character data.	K3	3	Lab-Based Learning	PPT Computer with C
3.		Demonstrate the working of the sliding window protocol (Go-Back-N) through programming.	K3	3	Lab-Based Learning	PPT Computer with C
4.		Demonstrate the selective repeat sliding window protocol with a suitable program.	K3	3	Lab-Based Learning	PPT Computer with C
5.		Develop a program to simulate the Stop and Wait protocol.	K3	3	Lab-Based Learning	PPT Computer with C
1.		Develop a program to simulate congestion control using the leaky bucket algorithm.	K3	3	Lab-Based Learning	PPT Computer with C
2.		Implement Dijkstra's algorithm to compute the shortest path in a network graph.	K3	3	Lab-Based Learning	PPT Computer with C
3.	CO 3	Implement distance vector routing by obtaining routing tables for each node in a sample network.	K3	3	Lab-Based Learning	PPT Computer with C
4.		Develop a program to construct a broadcast tree by subnetting a set of hosts.	K3	3	Lab-Based Learning	PPT Computer with C
1.	CO4	Examine network devices and configure a local area network.	K3	3	Demonstration-Based Learning	PPT Network Devices
2.		Demonstrate packet capture and traffic analysis using	K3	3	Lab-Based Learning	Computer withWireshark

		Wireshark.				
3.		Discover active hosts, open ports, and services in a network using Nmap.	K3	2	Lab-Based Learning	Computer with Nmap
4.		Determine the operating system of a host using Nmap.	K3	1	Lab-Based Learning	Computer with Nmap
5.		Analyze network performance metrics such as packet drops and throughput using NS2 Simulator.	K3	3	Lab-Based Learning with Case-Based Learning	Computer with NS2

Total No. of Classes: 45

Full Stack Development-II

Academic Year: 2025-26   **Programme: B.Tech**
Year/ Semester: V   **Section: A,B,C& D**
Name of the Course: Full Stack Development II   **Course Code:V23CSSE03**

LESSON PLAN

COURSE OUTCOMES (Along with Knowledge Level): After completion of this course, the students will be able to:

CO	Course Outcomes	Knowledge Level
CO1	Explain the key concepts of ExpressJS such as routing, HTTP methods, middleware, templating, and handling form data.	K2
CO2	Apply ExpressJS to implement cookies, sessions, authentication, database operations, and RESTful APIs in server-side applications.	K3
CO3	Develop ReactJS components using JSX, props, state, and styling to handle events and user interactions.	K3
CO4	Analyze ReactJS techniques such as conditional rendering, forms, routing, hooks, and screen updates to manage dynamic content.	K4
CO5	Apply MongoDB CRUD operations to create and manage databases, collections, and documents for fullstack applications.	K3

Targeted Proficiency and Attainment Levels (for each course Outcome):

Cos		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		65	65	65	65	65
Targeted level of Attainment	Level 3	60	60	60	60	60
	Level 2	50	50	50	50	50
	Level 1	45	45	45	45	45

Lecture Plan:

S. No	Course Outcome	Intended Learning Outcomes	Knowledge	No. of Hours	Pedagogy	Teaching aids
1.		Dissemination of Cos	-	1	Lecture With Discussion	ICT
2.		Basics of HTML, CSS=, JavaScript	K1	2	Lecture With Discussion	Chrome, VSCODE
3.		Define what Express JS is and its purpose in web development	K1	1	Lecture With Discussion	Chrome, VSCODE
4.		Describe the concept of routing in Express JS	K2	3	Lecture With Discussion	Chrome, VSCODE
5.	CO1	Identify the common HTTP methods (GET, POST, PUT, DELETE) used in Express JS applications.	K1	2	Lecture With Discussion	Chrome, VSCODE
6.		Explain the role of middleware in Express JS request-response cycles.	K2	4	Lecture With Discussion	Chrome, VSCODE
7.		Illustrate how a basic templating engine works with Express JS.	K2	4	Lecture With Discussion	Chrome, VSCODE
8.		Outline the process of handling simple form data submissions in Express JS	K2	3	Lecture With Discussion	Chrome, VSCODE

S. No	Course Outcome	Intended Learning Outcomes	Knowledge	No. of Hours	Pedagogy	Teaching aids
1.		Implement basic cookie creation and retrieval in an ExpressJS application	K3	2	Lecture With Discussion	ICT
2.		Demonstrate the use of sessions for managing user state in ExpressJS	K3	2	Lecture With Discussion	Chrome, VSCODE
3.	CO2	Apply a basic authentication strategy (e.g., username/password check) within an ExpressJS application.	K3	2	Lecture With Discussion	Chrome, VSCODE
4.		Perform fundamental database connection operations from an ExpressJS application	K3	3	Lecture With Discussion	Chrome, VSCODE
5.		Create simple RESTful API endpoints (e.g., GET for a list of resources) using ExpressJS	K3	6	Lecture With Discussion	Chrome, VSCODE

S. No	Course Outcome	Intended Learning Outcomes	Knowledge	No. of Hours	Pedagogy	Teaching aids
6.	**CO3**	Create a basic functional ReactJS component using JSX syntax.	K3	2	Lecture With Discussion	ICT
7.		Pass data between ReactJS components using props.	K3	2	Lecture With Discussion	Chrome, VSCODE
8.		Manage simple component-specific data using React'suse State hook for state	K3	2	Lecture With Discussion	Chrome, VSCODE
9.		Apply basic inline or external styling to a React JS component.	K3	2	Lecture With Discussion	Chrome, VSCODE
10.		Handle fundamental user interactions (e.g., button clicks, input changes) within a React JS component.	K3	4	Lecture With Discussion	Chrome, VSCODE

S. No	Course Outcome	Intended Learning Outcomes	Knowledge	No. of Hours	Pedagogy	Teaching aids
11.	**CO4**	Compare different approaches to conditionally render elements in ReactJS	K4	3	Lecture With Discussion	ICT
12.		Examine how forms are handled and validated within ReactJS applications.	K4	3	Lecture With Discussion	Chrome, VSCODE
13.		Describe the purpose and basic usage of a client-side routing library (e.g., React Router) in ReactJS.	K2	3	Lecture With Discussion	Chrome, VSCODE
14.		Differentiate between common React hooks (e.g., useState, useEffect) and their primary use cases for managing component lifecycle	K4	2	Lecture With Discussion	Chrome, VSCODE
15.		Explain how React efficiently updates the user interface in response to data changes.	K2	4	Lecture With Discussion	Chrome, VSCODE

S. No	Course Outcome	Intended Learning Outcomes	Knowledge	No. of Hours	Pedagogy	Teaching aids
16.		Connect to a MongoDB database using a basic driver.	K3	2	Lecture With Discussion	CMD,ICT
17.		Perform the **C**reate (insert) operation to add new documents to a MongoDB collection.	k3	2	Lecture With Discussion	CMD,ICT
18.		Execute the **R**ead (find) operation to retrieve documents from a MongoDB collection.	k3	2	Lecture With Discussion	CMD,ICT
19.	CO5	Implement the **U**pdate operation to modify existing documents in a MongoDB collection.	k3	2	Lecture With Discussion	CMD,ICT
20.		Apply the **D**elete operation to remove documents from a MongoDB collection.	k3	2	Lecture With Discussion	CMD,ICT
21.		Demonstrate how to create a new database and a new collection in MongoDB.	k3	2	Lecture With Discussion	CMD,ICT

Total No of Classes: 74

English for Employability

Academic Year: 2025-26 **Programme: B.Tech**
Year/ Semester: V **Section: A,B,C,D**
Name of the Course: English for Employability **Course Code :V23ENT04**

Course Outcomes (Along with Knowledge Level): After successful completion of course the student will able to

CO's	Course Outcomes	Knowledge Level
CO1	Demonstrate proficiency in verbal ability, including word meanings, synonyms, antonyms, and contextual usage, to enhance their communication skills and excel in competitive exams.	K3
CO2	Effectively apply various reading techniques and comprehension skills, including literal, inferential, critical, evaluative, and appreciative reading, to accurately understand and interpret complex texts.	K3
CO3	Apply knowledge and skills to participate effectively in group discussions on various topics, showcasing critical thinking, communication, and teamwork abilities.	K3
CO4	Construct a well-organized and compelling resume tailored to specific job descriptions and industries.	K3
CO5	Analyse the skills required to excel in an interview and identify areas for improvement.	K4

Reference Books:

1. Lewis, N. (1978). Word Power Made Easy. Pocket Books.
2. Wren, P. C., & Martin, H. (1990). High School English Grammar & Composition. S. Chand.
3. Krannich, C. R. (2004). 101 Dynamite Answers to Interview Questions. Impact Publications.
4. Jackson, T. (2009). Resume Magic: Trade Secrets of a Professional Resume Writer. JIST Publishing.
5. Puri, G. (2018). Verbal Ability and Reading Comprehension for CAT and Other MBA Entrance Examinations. Upkar Prakashan.

Targeted Proficiency Level and Targeted level of Attainment (for each Course Outcome):

Cos		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		55	55	55	55	55
Targeted level of Attainment	Level 3	55	55	55	55	55
	Level 2	50	50	50	50	50
	Level 1	45	45	45	45	45

S. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	**CO 1**	**Unit I: Verbal Ability** Recognise a wide range of vocabulary, including synonyms and antonyms, accurately in both written and spoken communication.	K2	2	Lecture	IFP
2		Practice the meanings of unfamiliar words through contextual clues in reading passages or conversations.	K3	2	Lecture With activity	IFP & Handout
3		Interpret word meanings using contextual clues to enhance reading comprehension and verbal reasoning.	K3	2	Lecture With activity	IFP & Handout
4		Demonstrate verbal proficiency through performance in vocabulary-based sections of competitive exams.	K3	2	Lecture With activity	IFP

S. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1.	**CO 2**	Unit-II: Reading Comprehension Infer appropriate reading strategies (literal, inferential, critical, evaluative, and appreciative) to comprehend a variety of complex texts.	K2	2	Lecture with Discussion and Activity	IFP & Handout
2.		Interpret implicit and explicit meanings in texts to draw accurate inferences and conclusions.	K3	2	Lecture with Discussion and Activity	IFP & Handout
3.		Evaluate the purpose, tone, and perspective of a text to assess its credibility and effectiveness.	K3	2	Lecture with Discussion and Activity	IFP & Handout
4.		Demonstrate the ability to analyze and appreciate literary and informational texts through critical reflection and discussion.	K3	2	Lecture with Discussion and Activity	IFP & Handout

S. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Demonstrate effective verbal and non-verbal communication skills to contribute meaningfully in group discussions.	K3	1	Lecture with Discussion and Activity	IFP & Handout
2	CO 3	Apply critical thinking to analyze topics and present logical, well-structured arguments during discussions.	K3	1	Lecture with Discussion and Activity	IFP & Handout
3		Collaborate with team members by actively listening, respecting diverse viewpoints, and building on others' ideas.	K3	2	Lecture with Discussion and Activity	IFP
4		Exhibit leadership and interpersonal skills to facilitate constructive dialogue and decision-making in group settings.	K3	2	Lecture with Discussion and Activity	IFP

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Construct a professional resume that highlights relevant skills, qualifications, and experiences aligned with specific job roles and industry standards.	K2	2	Lecture with Discussion and Activity	IFP
2	CO 4	Prepare a professional video resume that effectively highlights personal strengths, skills, and experiences tailored to a specific job role or industry.	K3	2	Lecture with Discussion and Activity	IFP & Handout
3		Identify key interview skills, including verbal communication, body language, active listening, and professional etiquette.	K3	2	Lecture with Discussion and Activity	IFP

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	**CO 5**	Examine personal strengths and weaknesses through mock interviews and feedback to determine areas for improvement.	K4	2	Lecture with Discussion and Activity	IFP & Handout
2		Apply strategies to enhance your interview performance, including response structuring, confidence-building, and industry-specific preparation.	K3	2	Lecture with Discussion and Activity	IFP

Total No. of Classes:32