SRI VASAVI ENGINEERING COLLEGE (Autonomous)

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

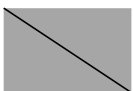# A.Y: 2023-24

V SEM AIML Handbook

Department of

Artificial Intelligence & Machine Learning

Pedatadepalli, Tadepalligudem-534101, A.P

INDEX

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..

ACADEMIC CALENDAR

Principal's Office
Date: 15-07-2023

Academic Calendar
For III B.Tech (V and VI Semesters), Academic Year 2023-24

V Semester			
Description	From	To	Weeks
Commencement of Class Work	31.07.2023		
I Unit of Instructions	31.07.2023	23.09.2023	8 W
I Mid Examinations	25.09.2023	30.09.2023	1 W
II Unit of Instructions	03.10.2023	25.11.2023	8 W
II Mid Examinations	27.11.2023	02.12.2023	1 W
Preparation & Practicals	04.12.2023	09.12.2023	1 W
End Examinations	11.12.2023	23.12.2023	2 W
Commencement of Next Semester Class Work (VI Semester)	26.12.2023		
VI Semester			
I Unit of Instructions	26.12.2023	17.02.2024	8 W
I Mid Examinations	19.02.2024	24.02.2024	1 W
II Unit of Instructions	26.02.2024	20.04.2024	8 W
II Mid Examinations	22.04.2024	27.04.2024	1 W
Preparation & Practicals	29.04.2024	04.05.2024	1 W
End Examinations	06.05.2024	18.05.2024	2 W

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.

SRI VASAVI ENGINEERING COLLEGE (Autonomous)
Pedatadepalli, TADEPALLIGUDEM-534 101, W.G. Dist.
Department of Artificial Intelligence & Machine Learning

CLASS CONSOLIDATED TIME TABLE

Class: V Semester   w.e.f:02.08.2023

Section: A   **Class Coordinator: Dr. K. Srinivasa Rao**   **Room No:** G-201

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	ML	WT LAB			LunchBreak	ACD	ACD	WT
Tue	WT	ML LAB			LunchBreak	DE	DE	ML
Wed	DE	MCCP-I			LunchBreak	WT	ACD	ML
Thu	WT	ML	ACD	LIBRARY	LunchBreak	DE	WT	SPORTS
Fri	ACD		DE	ML	LunchBreak	DE	APTITUDE(V)	
Sat	APTITUDE		WT	ML	LunchBreak	MCCP-I		

Staff Details:

S. No.	Course Code	Course Name	Section
1.	V20AIT09	Data Engineering	Dr. K Srinivasa Rao
2.	V20AIT010	Machine Learning	Mr. S. Kumar Reddy Mallidi
3.	V20AIT11	Web Technologies	Dr. K.Shirin Bhanu
4.	V20CSTJE01	Master Coding and Competitive Programming - Part-1 **(Job Oriented Elective-I)**	Dr. V Venkateswara Rao / Mrs. M.Sai Durga Lakshmi (Wednesday) / Ms. M Pravallika (Saturday)
5.	V20AITPE04	Automata and Compiler Design **(Professional Elective-I)**	Mr. G Sriram Ganesh
6.	V20AIL09	Machine Learning Lab	Mr. S. Kumar Reddy Mallidi / Dr. K Srinivasa Rao
7.	V20AIL10	Web Technologies Lab	Dr. K.Shirin Bhanu /Mr. K Lakshmaji
8.	V20ENT03	Professional Communication Skills-III (PCS-III)	Mrs.A.Kiranmayee (Verbal)/ Mr.J.N.V.Somayajulu (Aptitude)

Note: As part of curriculum you have to study **Skill Oriented Course-III** also, it will be conducted any one week during the semester

Lab Venues:

S.No.	Name of the Lab Course	Lab Venue
1	Machine Learning Lab	EFCodd Lab (B-Block Ground Floor)
2	Web Technologies Lab	Linus Torvalds Lab (CRC-I First Floor)
3	**Job Oriented Elective-I:** Master Coding in Competitive Programming(MCCP-I)	Yellow Seminar Hall (G-Block Ground Floor)

Head of the Department

COURSE STRUCTURE

V - SEMESTER

S.No.	Course Code	Name of the Course		L	T	P	C
1	V20AIT09	Data Engineering	PCC	3	0	0	3
2	V20AIT10	Machine Learning	PCC	3	0	0	3
3	V20AIT11	Web Technologies	PCC	3	0	0	3
4	V20AITJE01	**Job Oriented Elective-I** Master Coding and Competitive Programming - Part-1	JOE	0	0	6	3
5		**Professional Elective-I**	PEC	3	0	0	3
	V20AITPE01	**i)** Cryptography & Network Security					
	V20AITPE02	ii) Principles of Programming Languages					
	V20AITPE03	iii) Hadoop & Big Data					
	V20AITPE04	iv) Automata and Compiler Design					
6	V20AIL09	Machine Learning Lab	PCC	0	0	3	1.5
7	V20AIL10	Web Technologies Lab	PCC	0	0	3	1.5
9	V20SOC03	Skill Oriented Course-III* (Soft Skills)	SOC / SS	1	0	2	2
10	V20AIP01	Mini Project / Internship	Internship	0	0	3	1.5
11	V20ENT04	Professional Communication Skills -III	**MNC**	2	0	0	0
			Total:	**15**	**0**	**17**	**21.5**

Total Contact Hours: 32   **Total Credits: 21.5**

LESSON PLANS

Data Engineering

Academic Year : 2023-24   **Programme**: B.Tech

Semester : V   **Sections** : AIM

Name of the Course: Data Engineering   **Course Code**: V20AIT09

COURSE OUTCOMES (Along with Knowledge Level):

After completion of this course, the students will be able to:

CO No.	Course Outcome	BTKL
1	Describe data engineering lifecycle.	K2
2	Explain data architecture and data generation.	K2
3	Explain data engineering storage abstractions.	K2
4	Illustrate data ingestion process.	K2
5	Discuss queries, modeling, transformation and serving.	K2

Text Books:

1. Fundamentals of Data Engineering: Plan and Build Robust Data Systems, Joe Reis and Matt Housley, O'Reilly.

Reference Books:

1. Data Engineering with Python: Work with massive datasets to design data models and automate data pipelines using Python , Paul Crickard, Packt Publishing

2. Data Engineering Mining, Information and Intelligence, Edited by Yupo Chan, John R.Talburt, Terry M. Talley, ISBN 978-1-4419-0175-0 e-ISBN 978-1-4419-0176-7 DOI 10.1007/978-1-4419-0176-7 Springer New York Dordrecht Heidelberg London.

Targeted Proficiency Level (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

Lesson Plan:

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 1	Data Engineering Lifecycle, Evolution, Data Engineering and Data Science; Skills & Activities		1	Lecture	ICT Chalk &Talk
2		Data Maturity and the Data Engineer, The Background and Skills of a Data Engineer	K2	2	Lecture	ICT Chalk & Talk
3		Data Engineers Inside an Organization	K2	2	Lecture with Discussion	ICT Chalk & Talk
4		The Data Engineering Life Cycle	K2	2	Lecture	ICT
5		The Data Lifecycle versus the Data Engineering Lifecycle	K2	2	Lecture with Discussion	Chalk & Talk
6		Storage, Ingestion, Transformation, Serving Data	K2	2	Lecture	Chalk & Talk
7		Major Undercurrents across the Data Engineering Lifecycle.	K2	2	Lecture	Chalk & Talk
8	CO 2	Designing Good Data Architecture: Enterprise Architecture, Data Architecture, Good Data Architecture, Principles of Good Data Architecture, Major Architecture Concepts	K2	2	Lecture	Chalk & Talk
9		Examples and Types of Data Architecture, Who's Involved with Designing a Data Architecture. Data Generation in Source Systems: Sources of Data, Source Systems, Source System Practical Details Databases	K2	3	Lecture	ICT
10		APIs, Data Sharing, Third-Party Data Sources, Message Queues and Event-Streaming Platforms, Whom You'll Work With, Undercurrents and Their Impact on Source Systems.	K2	1	Lecture	ICT
11	CO 3	Storage: Raw Ingredients of Data Storage, Data Storage Systems- Single Machine Versus	K2	3	Lecture with Discussion	ICT Chalk & Talk

		Distributed Storage, Eventual Versus Strong Consistency				
12		File Storage, Block Storage, Object Storage, Cache and Memory-Based Storage Systems	K2	3	Lecture	ICT Chalk & Talk
13		The Hadoop Distributed File System, Streaming Storage, Data Engineering Storage Abstractions	K2	3	Lecture	Chalk & Talk
14		Big Ideas and Trends in Storage-Data Catalog, Data Sharing, Schema, Separation of Compute from Storage,	K2	2	Lecture	ICT
15		Data Storage Lifecycle and Data Retention, Single-Tenant Versus Multitenant Storage; Whom You'll Work With, Undercurrents	K2	2	Lecture	ICT
16		Ingestion: What is Data Ingestion, Key Engineering Considerations, Batch Ingestion Considerations, Message and Stream Ingestion Considerations.	K2	3	Lecture	Chalk &Talk
17		Ways to Ingest Data- Direct Database Connection, Change Data Capture, APIs, Message Queues and Event-Streaming Platforms, Managed Data Connectors	K2	2	Lecture	Chalk &Talk
18	CO 4	Managed Data Connectors, Moving Data with Object Storage, EDI, Databases and File Export, Practical Issues with Common File Formats	K2	2	Lecture	ICT Chalk & Talk
19		Shell, SSH, SFTP and SCP, Web hooks, Web Interface, Web Scraping Implementation	K2	2	Lecture with Discussion	ICT Chalk & Talk
20		Transfer Appliances for Data Migration	K2	1	Lecture	ICT Chalk &Talk
21		Data Sharing; Whom You'll Work With, Undercurrents.	K2	2	Lecture	ICT Chalk &Talk
22	CO 5	Queries, Modeling, and Transformation: Queries, Data Modeling, Transformations-Batch Transformations,	K2	2	Lecture	ICT

23		Materialized Views, Federation, and Query Virtualization, Streaming Transformations and Processing	K2	2	Lecture	ICT Chalk &Talk
24		Whom You'll Work With, Undercurrents. Serving Data for Analytics, Machine Learning:	K2	3	Lecture with Discussion	ICT Chalk &Talk
25		General Considerations for Serving Data, Analytics Business, Operational, and Embedded;	K2	3	Lecture with Discussion	ICT Chalk &Talk
26		Machine Learning- What a Data Engineer Should Know About ML	K2	3	Lecture with Discussion	ICT Chalk &Talk
27		Ways to Serve Data for Analytics and ML, Whom You'll Work With, Undercurrents	K2	3	Lecture	ICT

Total No. of Classes: 60

Machine Learning

Academic Year : 2023-24   **Programme:** **B.Tech**

Year/ Semester : **V Sem**   **Section: AIML**

Name of the Course: Machine Learning   **Course Code:** V20AIT010

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	Describe Machine Learning Activities.	K2
2.	CO2	Explain Feature Transformation and Feature Selection.	K2
3.	CO3	Illustrate Supervised Learning and Unsupervised.	K2
4.	CO4	Explain Semi-Supervised, Ensembling, and Reinforcement Learnings.	K2
5.	CO5	Describe Graphical Models and Sequential Data Modeling.	K2

Text Books:

1. Machine Learning, Saikat Dutt, Subramanian Chandramouli, Amit Kumar Das, Pearson.
2. Machine Learning: An Algorithmic Perspective, Stephen Marsland, 2nd Edition, CRC Press.
3. Pattern Recognition and Machine Learning, Christopher M. Bishop, Springer.
4. Semi-Supervised Learning, Olivier Chapelle, Bernhard Sch¨olkopf, Alexander Zien, The MIT Press.

Reference Books:

1. Machine Learning, Tom Mirchel,McgrawHill.
2. Machine Learning: The Art and Science of Algorithms that Make Sense of Data, Peter Flash, Cambridge University Press.
3. A First Course in Machine Learning, Simon Rogers & Mark Girolami, 2nd Edition, CRC Press.

Targeted Proficiency Level (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

Lesson Plan:

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1.		Dissemination of Vision, Mission of the Dept. and PEOs, Pos, & PSOs of the Programme		1	Lecture	ICT Chalk &Talk
2.		Human Learning vs Machine Learning	K1	2	Lecture	ICT Chalk & Talk
3.		Machine Learning Activities	K1	1	Lecture with Discussion	ICT Chalk & Talk
4.		Types of Data	K1	2	Lecture	ICT
5.	CO 1	Modelling & Evaluation- Predictive Models	K2	1	Lecture with Discussion	Chalk & Talk
6.		Modelling & Evaluation- Descriptive Models	K2	1	Lecture	Chalk & Talk
7.		Training a Model	K2	1	Lecture with Discussion	ICT Chalk & Talk
8.		Model Representation and Interpretability	K2	1	Lecture	ICT
9.		Evaluating Performance of a Model	K2	1	Lecture with Discussion	Chalk & Talk
10.		Improving Performance of a Model.	K2	1	Lecture	Chalk & Talk
11.		Feature Engineering: Introduction	K1	1	Lecture	Chalk & Talk
12.		Feature Transformation- Feature Construction	K2	1	Lecture	ICT
13.		Feature Transformation- Feature Extraction	K2	2	Lecture	ICT
14.	CO 2	Feature Selection- Issues in high-dimensional data	K2	1	Lecture	ICT
15.		Feature Selection- Key Drivers	K2	1	Lecture with Discussion	Chalk & Talk
16.		Feature Selection- Measures	K2	1	Lecture with Discussion	ICT Chalk & Talk

17.		Feature Selection- Process	K2	2	Lecture	ICT Chalk & Talk
18.		Feature Selection- Approaches	K2	3	Lecture with Discussion	ICT Chalk & Talk
19.		Classification-Introduction, Model, Learning Steps	K1	1	Lecture	Chalk &Talk
20.		The k-Nearest Neighbor Algorithm	K2	1	Lecture with Discussion	Chalk &Talk
21.		Decision Tree.	K2	1	Lecture	Chalk &Talk
22.		Support Vector Machines	K2	2	Lecture	ICT Chalk & Talk
23.		Regression- Introduction	K2	1	Lecture with Discussion	ICT Chalk & Talk
24.		Simple Linear Regression	K2	1	Lecture	ICT Chalk &Talk
25.	CO 3	Multiple Linear Regression	K2	1	Lecture with Discussion	ICT Chalk & Talk
26.		Assumptions and Problems with Regression	K2	1	Lecture with Discussion	ICT Chalk & Talk
27.		Improving Accuracy	K2	1	Lecture with Discussion	ICT Chalk & Talk
28.		Unsuoervised vs Supervised Learning	K1	1	Lecture with Discussion	ICT Chalk & Talk
29.		Applications	K1	1	Lecture with Discussion	ICT Chalk & Talk
30.		K-Means Clustering	K2	1	Lecture with Discussion	ICT Chalk & Talk
31.		Spectral Clustering	K2	1	Lecture with Discussion	ICT Chalk & Talk
32.		Hierarchical Clustering	K2	1	Lecture	ICT Chalk &Talk

33.		Semi-Supervised Learning Problem	K1	1	Lecture	ICT
34.		Sampling paradigm	K2	2	Lecture	ICT Chalk &Talk
35.		The Diagnostic Paradigm	K2	2	Lecture with Discussion	ICT Chalk &Talk
36.	CO 4	Ensemble Learning: Boosting	K2	1	Lecture with Discussion	ICT Chalk &Talk
37.		Ensemble Learning: Bagging, Random Forests	K2	2	Lecture with Discussion	ICT Chalk &Talk
38.		Reinforcement Learning: Overview, Examples	K1	2	Lecture with Discussion	ICT Chalk &Talk
39.		Markov Decision Process	K2	2	Lecture with Discussion	ICT Chalk &Talk
40.		Q-Learning	K2	1	Lecture with Discussion	ICT Chalk &Talk
41.		Bayesian Networks	K2	1	Lecture	ICT
42.		Conditional Independence	K2	1	Lecture	ICT Chalk &Talk
43.	CO 5	Markov Random Fields	K2	2	Lecture	ICT Chalk &Talk
44.		Inference in Graphical Models	K2	2	Lecture with Discussion	ICT Chalk &Talk
45.		Sequential Data: Markov Models	K2	2	Lecture with Discussion	ICT Chalk &Talk
46.		Hidden Markov Models	K2	3	Lecture with Discussion	ICT Chalk &Talk
47.		Linear Dynamical Systems	K2	2	Lecture with Discussion	ICT Chalk &Talk

Total No. of Classes: 65

Web Technologies

Academic Year: 2023-24   **Programme: B.Tech**

Year/ Semester: V   **Section: AIM**

Name of the Course: Web Technologies   **Course Code : V20AIT11**

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	Illustrate the basic concepts of HTML and CSS.	K2
2.	CO2	Illustrate Extensible markup language and XML parsers	K3
3.	CO3	Develop web applications using JDBC	K3
4.	CO4	Build database driven web applications using JSP	K3
5.	CO5	Illustrate the basic concepts of Angular and NODE JS.	K2

Text Books:

> 1. Programming the World Wide Web, 7th Edition, Robet W Sebesta, Pearson, 2013.
> 2. Node.js, MongoDB and Angular Web Development, 2nd Edition,BradDayley Brendan
> Dayley Caleb Dayley,Pearson Education,2018
> 3. JSP:The Complete reference,PhilHanna,The McGraw-Hill Copanies,2001.
> 4. JDBC, Servlets, and JSP, New Edition, Santhosh Kumar K, Kogent Learning Solutions Inc,
> Dreamtech Press, 2018.

Reference Books:

> 1. Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML and AJAX, Black book,
> Dream Tech.
> 2. An Introduction to Web Design, Programming, Paul S Wang, Sanda S Katila, Cengage
> Learning
> 3. Web Technologies, 1st Edition 7th impression, Uttam K Roy, Oxford, 2012.

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:

		UNIT-I: HTML, CSS, JavaScript				
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Dissemination of vision, mission, PEOs, POs,PSOs		1	Lecture	PPT
2		Illustrate HTML Basic Syntax, Explain Standard HTML Document Structure, Discuss Basic Text Markup, Images, Hypertext Links, Lists, Tables, Frames, Forms.	K2	6	Lecture with Discussion	PPT
3	CO 1	Illustrate Cascading style sheets, Discuss Levels of Style Sheets, Describe Style Specification Formats, Selector Forms.	K2	5	Lecture with Discussion	PPT
4		Illustrate JavaScript General Syntactic Characteristics, Discuss Primitives Operations, Expressions, Screen output, Keyboard Input, and Control Statements	K2	6	Lecture with Discussion	PPT
		TOTAL		18		

		UNIT-II:				
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1.		Describe the syntax of XML, XML Document Structure,	K2	3	Lecture With Discussion	PPT
2.	CO2	Demonstrate Document type Definition (DTD) and Namespaces	K3	3	LectureWith Discussion	PPT
3.		Demonstrate XML schemas, XSLT,XPath, XML Parsers - DOM and SAX	K3	4	Lecture With Discussion	PPT
		TOTAL		10		

		UNIT-III: Working with Database				
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Describe JDBC Components	K2	2	Lecture with Demonstration	PPT
2		Discuss JDBC Architecture, Types of Drivers	K2	2	Lecture with Demonstration	PPT
3		Demonstrate Working with JDBC APIs Develop Simple Application	K3	2	Lecture with Demonstration	PPT
4		Demonstrate Working with Prepared Statement, Result Set and Transaction Management.	K3	4	Lecture with Demonstration	PPT
		TOTAL		10		

		UNIT-IV: Introduction to Servlets & JSP				
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Discuss Life cycle of Servlet and Limitations of servlets,	K2	2	Lecture with Discussion	PPT
2		Illustrate Components of a JSP Page, Directives, and comments.	K2	5	Lecture with Discussion	PPT
3		Demonstrate Expressions, Scriptlets, Declarations, implicit objects, Database Access and session tracking	K3	5	Lecture with Discussion	PPT
		TOTAL		12		

		UNIT-V: Fundamentals of NODE JS and Angular				
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Discuss about Installation of Node.js and working with Node Packages	K2	2	Lecture with Discussion	PPT
2		Describe Angular, Modules, Directives and Data Binding	K2	4	Lecture with Discussion	PPT

3		Illustrate Dependency Injection, Services, and Creating a Basic Angular Application.	K2	4	Lecture with Discussion	PPT
		TOTAL		**10**		

Total Hours: 60

Mastering Coding and Competitive Programming

Academic Year: 2023-24   **Programme: B.Tech**

Year/ Semester: V   **Section: AIM**

Name of the Course: Mastering Coding and Competitive Programming Lab

Course Code :   V20AITJE01

Course Outcomes (Along with Knowledge Level):

After successful completion of course the student will able to

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

Automata and Compiler Design

Academic Year: 2023-24   **Programme: B.Tech**

Year/ Semester: V   **Section: AIM**

Name of the Course: Automata and Compiler Design   **Course Code :   V20AITPE04**

Course Outcomes (Along with Knowledge Level):

After successful completion of course the student will able to

S. No.	COURSE OUTCOMES (After completion of the course, The Learner is able to)	KNOWLEDGE LEVEL
CO1	Construct Finite Automata and Regular Expressions.	K3
CO2	Describe the compilation process and lexical analyzer	K2
CO3	Construct Top down and Bottomup parsing Techniques	K3
CO4	Produce intermediate code generation process and run time environments	K3
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:―Compiler Construction ,Principles & Practice‖ , 1st Edition ,Thomson Press, 2006.

2. Tremblay JP, Sorenson GP :― The Theory & Practice of Compiler writing , 1st Edition ,BSP Publication, 2010.

3. Theory of Computation, V.Kulkarni, Oxford University Press,2013

Targeted Proficiency Level and Attainment level (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

UNIT – I

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**		BB
1.		Describe Alphabet, Strings and Languages	K1	1	Lecture with discussion	BB
2.		Explain Finite Automata	K2	2	Lecture with discussion	BB
3.		Construct DFA's & NFA's	K3	3	Lecture with demonstration	PPT
4.		Explain Equivalence between NFA and DFA	K2	1	Lecture with demonstration	PPT
5.	CO1	Demonstrate Equivalence between NFA and ϵ-NFA	K3	2	Lecture with demonstration	PPT
6.		Construct Regular Expressions	K3	1	Lecture with demonstration	PPT
7		Explain Equivalence betweenRegular Expressions and Finite Automata.	K3	2	Lecture with demonstration	BB
8		Demonstrate Chomsky's Hierarchy	K3	1	Lecture with demonstration	PPT
Total Hours				**14**		

UNIT-II

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	BB
2.		Explain the Structure of a Compiler	K2	2	Lecture with discussion	PPT
3.		Explain The Role of the Lexical Analyzer	K2	2	Lecture with demonstration	PPT
4.	CO2	Define Specification of Tokens	K1	1	Lecture with demonstration	BB
5.		Describe Recognition of Tokens	K1	1	Lecture with demonstration	BB
6.		Describe Lexical-Analyzer Generator Lex	K2	2	Lecture with demonstration	PPT
7		Define Context Free Grammar	K1	1	Lecture with discussion.	BB

8		Explain Derivation and types	K2	2	Lecture with demonstration	BB
9		Explain Derivation Trees	K2	1	Lecture with demonstration	BB
10		Describe Ambiguous Grammar	K1	1	Lecture with demonstration	BB
11		Explain Elimination of Left Recursion and Left Factoring	K2	2	Lecture with demonstration	BB
	Total Hours			16		

UNIT-III

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	BB
2.		Construct First and Follow	K3	2	Lecture with demonstration	BB
3.		Construct LL(1) Grammars	K3	2	Lecture with demonstration	BB
4.		Construct Bottom-Up Parsing	K3	2	Lecture with demonstration	BB
5.		Demonstrate Error Recovery in Predictive Parsing.	K3	1	Lecture with demonstration	BB
6.	CO3	Explain Bottom-Up Parser Classifications	K2	1	Lecture with demonstration	PPT
7		Explain Handle Pruning	K2	1	Lecture with demonstration	BB
8.		Explain Shift-Reduce Parsing	K2	1	Lecture with demonstration	BB
9.		Construct SLR Parsing Tables	K3	2	Lecture with demonstration	PPT
10		Construct CLR (1)	K3	2	Lecture with demonstration	BB
11		Construct LALR Parsing Tables	K3	2	Lecture with demonstration	BB
12		Complete comparison of all	K3	1	Lecture with demonstration	BB

		Bottom-up approaches				
Total Hours				**19**		

UNIT – IV

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	BB
2.		Explain Evaluation Orders for SDD's	K2	1	Lecture with discussion	BB
		Describe Intermediate Code Generation	K2	1	Lecture with demonstration	BB
5.		Explain Variants of Syntax Trees	K2	2	Lecture with discussion	BB
6.		Explain Three-Address Code	K2	1	Lecture with demonstration	BB
7.	CO4	Explain Basic Blocks and Flow Graph.	K2	2	Lecture with demonstration	BB
9.		Demonstrate Control Flow	K3	1	Lecture with demonstration	BB
10.		Explain Run-Time Environments: Storage Organization	K2	1	Lecture with demonstration	BB
11.		Illustrate Stack Allocation of Space	K3	1	Lecture with demonstration	BB
12		Illustrate Heap Management	K3	1	Lecture with demonstration	BB
				12		

UNIT-V

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 optimizationof Basicblocks.	K1	1	Lecture with discussion	BB
4		Explain Peephole Optimization	K2	1	Lecture with discussion	PPT
5	CO5	Describe Data flow Analysis	K1	1	Lecture with discussion	BB
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 SimpleCode generation	K2	1	Lecture with demonstration	PPT
	Total Hours			**09**		

Total No. of classes: 70

Machine Learning using Python Lab

Academic Year: 2023-24   **Programme: B.Tech**

Year/ Semester: V   **Section: CST**

Name of the Course: Machine Learning using Python Lab   **Course Code :**   V20AIL09

Course Outcomes (Along with Knowledge Level):

After successful completion of course the student will able to

CO 1	Demonstrate advanced python libraries used in Machine Learning.	K3
CO 2	Demonstrate feature reduction process.	K3
CO 3	Implement probabilistic classifiers using Python Programming.	K3
CO 4	Construct non-probabilistic classifiers using Python Programming.	K3
CO 5	Demonstrate the process of clustering using the K-Means algorithm.	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	55	55	55	55	55

Lecture Plan:

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 1	Dissemination of Department Vision, Mission, PEOs, POs, PSOs	-	1	Lecture With Discussion	ICT
		Working with Numpy& Pandas libraries	K3	1	LectureWith Discussion	ICT
2		Working with, Matplotlib &sklearn libraries	K3	2	LectureWith Discussion	ICT
3		Importing, preprocessing and slitting datasets	K3	2	LectureWith Discussion	ICT
4	CO2	Demonstrate Feature Extraction	K3	2	LectureWith Discussion	ICT
5		Demonstrate Feature Selection	K3	2	LectureWith Discussion	ICT
6	CO 3	Bayes classifier implementation	K3	2	Lecture With Discussion	ICT
7		Logistic regression implementation.	K3	2	Lecture With Discussion	ICT

8		KNN algorithmimplementation.	K3	2	Lecture With Discussion	ICT
9		SVM classifierimplementation.	K3	2	Lecture With Discussion	ICT
10	CO 4	Decision tree classifier implementation.	K3	3	Lecture With Discussion	ICT
11		Random forest algorithm implementation.	K3	1	Lecture With Discussion	ICT
12		Adaboost algorithm implementation.	K3	2	Lecture With Discussion	ICT
13	CO 5	Demonstration of K-means clustering algorithm	K3	3	Lecture With Discussion	ICT
14		Demonstrate sequential labeling	K3	3	Lecture With Discussion	ICT

Total No. of Classes: 30

Web Technologies Lab

Academic Year: 2022-23   **Programme: B.Tech**
Year/ Semester: V   **Section: AIM**
Name of the Course: Web Technologies Lab   **CourseCode: V20AIL10**

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	Demonstrate the basic concepts of HTML, CSS and JavaScript.	K3
CO2	Demonstrate an XML Document Structure, XSLT, XPath and XML parsers.	K3
CO3	Demonstrate working with database using JDBC.	K3
CO4	Build web applications using Servlets & JSP.	K3
CO5	Demonstrate the basic concepts of Node JS and Angular JS.	K3

Text Books:

1. Programming the World Wide Web, 7th Edition, Robet W Sebesta, Pearson, 2013.
2. Node.js, MongoDB and Angular Web Development, 2nd Edition,BradDayley Brendan
   Dayley Caleb Dayley,Pearson Education,2018
3. JSP:The Complete reference,PhilHanna,The McGraw-Hill Copanies,2001.
4. JDBC, Servlets, and JSP, New Edition, Santhosh Kumar K, Kogent Learning Solutions Inc,
   Dreamtech Press, 2018.

Reference Books:

1.   Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML and AJAX, Black book, Dream Tech.
2.   An Introduction to Web Design, Programming, Paul S Wang, Sanda S Katila, Cengage Learning
3.   Web Technologies, 1st Edition 7th impression, Uttam K Roy, Oxford, 2012.

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

COs		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		70	70	70	70	70
Targeted level of Attainment	Level 3	70	70	70	70	70
	Level 2	60	60	60	60	60
	Level 1	50	50	50	50	50

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1.		Demonstrate HTML fundamental constructs. (i) Headings (ii) Links (iii) Paragraph (iv) Images (v) Tables	K3	3	Lecture with Discussion	PPT
2.	CO 1	Demonstrate HTML fundamental constructs. (i) Frames (ii) Forms and HTML controls Design Cascading style sheets (i) Internal (ii) External (iii) Inline	K3	3	Lecture with Discussion	PPT
3.		Develop the Following programs using JavaScript (i) Check if a given number is even or odd using an If statement (ii) Check if a given string is a Palindrome using Control Statements	K3	3	Lecture with Discussion	PPT
		TOTAL		9		

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1.	CO2	Develop an XML file which will display the Book information which includes the following: (i) Title of the book (ii) Author Name (iii) ISBN number (iv) Publisher name (v) Edition (vi) Price (a) Write a	K3	6	Lecture With Discussion	PPT
2.		Develop Document Type Definition (DTD) to validate the above XML file. (b) Write a XML Schema Definition (XSD).	K3	3	LectureWith Discussion	PPT
		TOTAL		9		

			Working with Database				
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Develop a JSP to insert, delete, and update the details of student into the database using JDBC connectivity.	K3	6	Lecture with Demonstration	PPT
		TOTAL		6		

		Servlets & JSP				
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Develop a simple JSP to print the current Date and Time.	K3	3	Lecture with Demonstration	PPT
2	CO 4	Develop JSP program calculates factorial values for an integer number, while the input is taken from an HTML form.	K3	3	Lecture with Demonstration	PPT
3		Develop JSP program shows a Sample Order Form	K3	3	Lecture with Demonstration	PPT
		TOTAL		9		

		NODE JS and Angular				
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Develop a simple Angular JS form.	K3	3	Lecture with Discussion	PPT
2	CO 5	Develop a simple Node JS application.	K3	3	Lecture with Discussion	PPT
		TOTAL		6		

Total Hours: 39

Professional Communication Skills –III

Academic Year: 2023-24   **Programme: B.Tech**

Year/ Semester: V   **Section: AIM**

Name of the Course: Professional Communication Skills –III Course Code :   V20ENT03

Course Outcomes (Along with Knowledge Level):

After successful completion of course the student will able to

CO	Course Outcomes	Knowledge Level
1	Distinguish the subtle meanings of various words in different contexts, recognize similar words as well as words with contrast meanings and use them appropriately. Express writer's tone and relevant ideas using different types of writing skills and prepare resume to showcase skills and accomplishments. Organize thoughts in the discussions and express views without reticence. Develop the ability to write different types of essays in a structured way, maintaining cohesion and logic.	K4
2	Identify the central theme and arrange the scrambled sentences into a meaningful passage. Draft emails with appropriate subject-lines and relevant content. Compare different pairs of words, recognize the relationship between the head words and the options to siphon correct analogy Choose an appropriate word to make a sentence meaningful. Infer the meaning of the picture by thinking out of the box and speak without inhibitions and face interviews with aplomb	K2
3	Analyze appropriate methods of logical thinking on Ratio and Proportion, Partnership, LCM and HCF, Number System, Areas & Volumes.	K4
4	Demonstrate problem solving skills through the concepts of Percentages, Profit and loss, Simple Interest & Compound Interest and Allegation.	K3
5	Calculate the end results of Cubes, Dice and Data Analysis, Time & Work, Time & Distance, Race & Games.	K4

Text Books:

T1: PIC-VOC

T2: VERBAL ABILITY-2

T3: WORK BOOK ON APTITUDE

Reference Books:

1. Dr.Sujani Tata et al., Pic Voc (2015) – Published by Sri Vasavi Engineering College
2. Lewis Norman, Word Power Made Easy (2008). Goyal Publishers & Distributors Pvt. Ltd.
3. Dr.Shalini Verma, Reetesh Anand, Word Power Made Handy(2017). S Chand Publications.
4. R S Aggarwal,Objective General English (2017). S Chand Publications.
5. Sunita Mishra & C.Muralikrishna, Communication Skills for Engineers (2006). Dorling
   a. Kindersley (India) Pvt. Ltd., licensees of Pearson Education in South Asia.
6. Charles W Hanson. Resume: Writing 2020 The Ultimate Guide to Writing a Resume that
   a. Lands YOU the Job! (2019).
7. Raymond Murphy. Essential Grammar in Use (1985).Cambridge University Press
8. Seely John. The Oxford Guide to Writing & Speaking (2004). Oxford University Press.
9. Jain,T.S. & Gupta. , 2010, Interviews and Group Discussions, Upkar's Publications.
10. Training & Placement cell, 2020, Workbook -1 on Aptitude, Sri Vasavi Engineering
    a. College.
11. M Tyra, 2013, Magical Book on Quicker maths, BSC Publications.
12. K Kundan & M Tyra, 2009, Practice Book on Quicker Maths, BSC Publications.
13. Dr. RS. Agarwal , 2017, Quantitative Aptitude, Sultan Chand Publications
14. Dr. RS. Agarwal, 2017, A modern approach to verbal & on verbal reasoning, Sultan Chand Publications.

Hyperlinks

1. https://www.indiabix.com/
2. https://www.campusgate.co.in/
3. https://www.questionpaper.org/

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

Course Outcome	Targeted Proficiency Level (% of Marks)	Targeted level of Attainment (% Students)
1	50	60
2	50	60
3	50	60
4	50	60
5	50	60

CO 1

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Infer the contextual meaning of words and its contextual usage.	K2	4	Lecture	PPT/A.V
2		Predict the Synonyms-Antonyms of words.	K2	4	Discussion	A.V
3		Develop their resume as per job description	K3	2	Lecture	PPT/A.V
4	CO 1	Outline paragraphs and essays	K4	2	Lecture	A.V
5		Arrange their ideas logically and present effectively in GDs	K4	2	Lecture	PPT/A.V
6		Connect their views logically and coherently to participate in JAM, and Presentations	K4	3	Lecture	PPT/A.V
7		Relate their creative pursuit to design Advertisements	K4	1	Lecture	PPT/A.V

CO 2

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Recognize and master "Tenses' and 'Voice' to speak and write effectively.	K1	2	Lecture	PPT/A.V
2		Present their ideas concisely to draft Emails	K1	2	Lecture	PPT/A.V
3	CO 2	Explain an unfamiliar concept or idea using an analogy.	K2	2	Lecture	PPT/A.V
4		Express their achievements and SWOT confidently to face different types of Interviews	K2	2	Lecture	PPT/A.V
5		Interpret the given picture and write a creative paragraph using writing strategies	K2	2	Lecture	PPT/A.V

CO 3

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Identify the Next letter or Number in a correct Relation.	K4	2	Lecture	PPT/A.V
2	CO 3	Justify the relation between words and Numbers.	K4	2	Lecture	PPT/A.V
3		Identify different one from group of terms.	K4	2	Lecture	PPT/A.V
4		Describe their Rank in a class or in a Computation.	K4	2	Lecture	PPT/A.V

CO 4

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Classify the ages in family members/ Explain the relation between numbers.	K3	2	Lecture	PPT/A.V
2	CO 4	Calculate the Actual time in Mirror and Water/ Classify the Images.	K3	2	Lecture	PPT/A.V
3		Differentiate the logic behind the conclusions.	K3	2	Lecture	PPT/A.V
4		Explain the logic for a given problem.	K3	2	Lecture	PPT/A.V

CO 5

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Choose the correct relation between the persons.	K4	2	Lecture	PPT/A.V
2		Show the correct direction.	K4	2	Lecture	PPT/A.V
3		Calculate the Average of data.	K4	2	Lecture	PPT/A.V
4	CO 5	Relate the correct day for a given date and angle between two hands of a clock.	K4	2	Lecture	PPT/A.V
5		Intercept data.	K4	2	Lecture	PPT/A.V
6		Report theReal Time Scenarios possibility..	K4	2	Lecture	PPT/A.V

Total No. of Classes:28+28=56