LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I), ISO 9001:2015 Certified Institution
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
hodit@lbrce.ac.in, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT
PART-A

Name of Course Instructor: K.RAVITEJA
Course Name & Code   : BIGDATA ANALYTICS & 20CS19
L-T-P Structure   : 3-0-0   **Credits:** 3
Program/Sem/Sec   : B.Tech/VI/A   **A.Y.:** 2023-24

PREREQUISITE: Should have knowledge of one Programming Language (Java preferably), Practice of SQL (queries and sub queries), exposure to Linux Environment.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

Understanding the process of distributed data (Structured, Semi-Structured and Unstructured) that process the Terabytes of data using Hadoop Eco System Tools.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Identify Big Data and its Business Implications. **(Understand-L2)**
CO2	Process of distributed file system using Hadoop. **(Apply-L3)**
CO3	Illustrate the Map Reduce mechanism. **(Apply-L3)**
CO4	Develop Structured data processing tools. **(Apply-L3)**
CO5	Develop semi/ unstructured data processing tools. **(Apply– L3)**

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	-	-	-	-	-	-	-	-	-	2	-	-	-
CO2	2	-	2	-	-	-	-	-	-	-	-	2	1	-	2
CO3	2	-	2	-	-	-	-	-	-	-	-	2	1	-	3
CO4	2	3	-	-	1	-	-	-	-	-	-	2	2	-	3
CO5	2	3	-	-	1	-	-	-	-	-	-	2	-	-	2
	1 - Low				**2 –**Medium					**3 -** High					

TEXTBOOKS:

T1   Tom White" Hadoop: The Definitive Guide" Third Edit, O'reilyMedia,2012.

T2   Big Data and Analytics, 2ed Seema Acharya, Subhashini Chellappan, Wiley2015.

REFERENCE BOOKS:

R1   Michael Berthold, DavidJ.Hand,"Intelligent DataAnalysis", Springer,2007.

R2   Jay Liebowitz ,"Big Data and Business Analytics" Auerbach Publications ,CRCpress (2013).

R3   Tom Plunkett, Mark Hornick, "Using R to Unlock the Value of Big Data: Big Data Analytics with Oracle R Enterprise and Oracle R Connector for Hadoop",McGraw-Hill/Osborne Media(2013),Oracle press.

R4   AnandRajaramanandJefreyDavidUlman,"MiningofMassiveDatasets",Cambri dgeUniversityPress,2012

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Big data

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Big data, CEOs and Cos discussion	1	05-12-2023		TLM1	
2.	Types of Digital Data	1	06-12-2023		TLM1	
3.	Classification of Digital Data	1	07-12-2023		TLM1	
4.	Characteristics of Data	1	09-12-2023		TLM1	
5.	Evolution of Big Data	1	12-12-2023		TLM1	
6.	Definition of Big Data, Challenges with Big Data	1	13-12-2023		TLM1	
7.	What is Big Data? Other Characteristics of Data Which are not Definitional Traits of Big Data	1	14-12-2023		TLM1	
8.	Why Big Data? analyzing Data with Unix tools	1	16-12-2023		TLM1	
9.	Analyzing Data with Hadoop	1	19-12-2023		TLM1	
10.	Hadoop Streaming	1	20-12-2023		TLM1	
11.	Hadoop Echo System	1	21-12-2023		TLM1	

No. of classes required to complete UNIT-I: 11   **No. of classes taken:**

UNIT-II: Hadoop Distributed File System

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	The Design of HDFS	1	23-12-2023		TLM1	
13.	HDFS Concepts	1	26-12-2023		TLM1	
14.	Command Line Interface	1	27-12-2023		TLM1	
15.	Hadoop file system interfaces	1	28-12-2023		TLM1	
16.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	30-12-2023		TLM1	
17.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	02-01-2023		TLM1	
18.	Hadoop I/O: Compression	1	03-01-2023		TLM1	
19.	Serialization	1	04-01-2023		TLM1	
20.	Avro and File-Based Data structures	1	06-01-2023		TLM1	
21.	Bigdata Applications	1	09-01-2023		TLM1	
22.	Bigdata Analytics Use cases	1	10-01-2023		TLM1	
23.	Bigdata Analytics Use cases	1	11-01-2023		TLM1	
24.	Bigdata Analytics Challenges	1	13-01-2023		TLM1	

No. of classes required to complete UNIT-II: 13   **No. of classes taken:**

UNIT-III: Map Reduce Technique

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
25.	How Map Reduce works?	1	16-01-2023		TLM1	
26.	Anatomy of a Map Reduce Job Run	2	17-01-2023 18-01-2023		TLM1	
27.	Job Failures	2	20-01-2023 23-01-2023		TLM1	
28.	Job Scheduling	1	24-01-2023		TLM1	
29.	Shuffle and Sort	1	25-01-2023		TLM1	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
30.	Task Execution	1	27-01-2023		TLM1	
31.	Map Reduce Types and Formats	1	06-02-2023		TLM1	
32.	Map Reduce Features	1	07-02-2023		TLM1	
No. of classes required to complete UNIT-III: 10				**No. of classes taken:**		

UNIT-IV: Structured Data Processing Tools

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Hive: Installation	1	08-02-2023		TLM1	
34.	Running Hive	1	10-02-2023		TLM1	
35.	Hive QL	1	13-02-2023		TLM1	
36.	Tables, Querying Data	2	14-02-2023 15-02-2023		TLM1	
37.	User Defined functions	2	17-02-2023 20-02-2023		TLM1	
38.	Sqoop: Introduction	1	21-02-2023		TLM1	
39.	generate code	1	22-02-2023		TLM1	
40.	Database import	2	24-02-2023 27-02-2023		TLM1	
41.	working with imported data	2	28-02-2023 29-02-2023		TLM1	
42.	Importing large objects	1	02-03-2023		TLM1	
43.	performing an export	1	05-03-2023		TLM1	
44.	Applications	1	06-03-2023		TLM1	
No. of classes required to complete UNIT-IV: 18				**No. of classes taken:**		

UNIT-V: Semi-structured and unstructured Data Processing Tools Pig

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
45.	Introduction to PIG	1	07-03-2023		TLM1	
46.	Execution Modes of Pig	1	09-03-2023		TLM1	
47.	Comparison of Pig with Databases	1	12-03-2023		TLM2	
48.	Grunt, Pig Latin	1	13-03-2023		TLM2	
49.	User Defined Functions	1	14-03-2023		TLM2	
50.	Data Processing operators	1	16-03-2023		TLM2	
51.	HBase: Basics	1	19-03-2023		TLM2	
52.	Concepts, Clients	1	20-03-2023		TLM2	
53.	Example	1	21-03-2023		TLM2	
54.	HBase Versus RDBMS	1	23-03-2023		TLM2	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

CONTENT BEYOND THE SYLLABUS:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	BDA Use case – I	1	26-03-2023		TLM2	
2.	BDA Use case – II	1	27-03-2023		TLM2	

3.	BDA Use case - III	1	28-03-2023		TLM2	
4.	BDA Use case - IV	1	30-03-2023		TLM2	
				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 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.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 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.
PO 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.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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.
PO 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.
PO 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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools..

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr K.Raviteja**	**Dr K.Devi Priya**	**Dr. K.Phaneendra**	**Dr. B.Srinivasa Rao**
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT
PART-A

Name of Course Instructor: PAVITRA RAMACHANDRAPURAM
Course Name & Code   : BIGDATA ANALYTICS & 20CS19
L-T-P Structure   : 3-0-0   **Credits:** 3
Program/Sem/Sec : B.Tech/VI/B   **A.Y.:** 2023-24

PREREQUISITE: Should have knowledge of one Programming Language (Java preferably), Practice of SQL (queries and sub queries), exposure to Linux Environment.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

Understanding the process of distributed data (Structured, Semi-Structured and Unstructured) that process the Terabytes of data using Hadoop Eco System Tools.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Identify Big Data and its Business Implications. **(Understand-L2)**
CO2	Process of distributed file system using Hadoop. **(Apply-L3)**
CO3	Illustrate the Map Reduce mechanism. **(Apply-L3)**
CO4	Develop Structured data processing tools. **(Apply-L3)**
CO5	Develop semi/ unstructured data processing tools. **(Apply– L3)**

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	-	-	-	-	-	-	-	-	-	2	-	-	-
CO2	2	-	2	-	-	-	-	-	-	-	-	2	1	-	2
CO3	2	-	2	-	-	-	-	-	-	-	-	2	1	-	3
CO4	2	3	-	-	1	-	-	-	-	-	-	2	2	-	3
CO5	2	3	-	-	1	-	-	-	-	-	-	2	-	-	2
	1 - Low			**2 –**Medium				**3 -** High							

TEXTBOOKS:
  T1   Tom White" Hadoop: The Definitive Guide" Third Edit, O'reilyMedia,2012.
  T2   Big Data and Analytics, 2ed Seema Acharya, Subhashini Chellappan, Wiley2015.
REFERENCE BOOKS:
  R1   Michael Berthold, DavidJ.Hand,"Intelligent DataAnalysis", Springer,2007.
  R2   Jay Liebowitz ,"Big Data and Business Analytics" Auerbach Publications ,CRCpress (2013).
  R3   Tom Plunkett, Mark Hornick, "Using R to Unlock the Value of Big Data: Big Data Analytics with Oracle R Enterprise and Oracle R Connector for Hadoop",McGraw-Hill/Osborne Media(2013),Oracle press.
  R4   AnandRajaramanandJefreyDavidUlman,"MiningofMassiveDatasets",Cambri dgeUniversityPress,2012

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Big data

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Big data, CEOs and Cos discussion	1	8-12-2023		TLM1	
2.	Types of Digital Data	1	9-12-2023		TLM1	
3.	Classification of Digital Data	1	12-12-2023		TLM1	
4.	Characteristics of Data	1	13-12-2023		TLM1	
5.	Evolution of Big Data	1	15-12-2023		TLM1	
6.	Definition of Big Data, Challenges with Big Data	1	16-12-2023		TLM1	
7.	What is Big Data? Other Characteristics of Data Which are not Definitional Traits of Big Data	1	19-12-2023		TLM1	
8.	Why Big Data? analyzing Data with Unix tools	1	20-12-2023		TLM1	
9.	Analyzing Data with Hadoop	1	22-12-2023		TLM1	
10.	Hadoop Streaming	1	23-12-2023		TLM1	
11.	Hadoop Echo System	1	26-12-2023		TLM1	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Hadoop Distributed File System

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	The Design of HDFS	1	27-12-2023		TLM1	
13.	HDFS Concepts	1	29-12-2023		TLM1	
14.	Command Line Interface	1	30-12-2023		TLM1	
15.	Hadoop file system interfaces	1	02-01-2024		TLM1	
16.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	03-01-2024		TLM1	
17.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	05-01-2024		TLM1	
18.	Hadoop I/O: Compression	1	06-01-2024		TLM1	
19.	Serialization	1	09-01-2024		TLM1	
20.	Avro and File-Based Data structures	1	10-01-2024		TLM1	
21.	Bigdata Applications	1	12-01-2024		TLM1	
22.	Bigdata Analytics Use cases	1	23-01-2024		TLM1	
23.	Bigdata Analytics Use cases	1	24-01-2024		TLM1	
24.	Bigdata Analytics Challenges	1	26-01-2024		TLM1	
No. of classes required to complete UNIT-II: 13				**No. of classes taken:**		

UNIT-III: Map Reduce Technique

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
25.	How Map Reduce works?	1	27-01-2024		TLM1	
26.	Anatomy of a Map Reduce Job Run	1	06-02-2024		TLM1	
27.	Job Failures	1	07-02-2024		TLM1	
28.	Job Scheduling	1	09-02-2024		TLM1	
29.	Shuffle and Sort	1	10-02-2024		TLM1	
30.	Task Execution	1	13-02-2024		TLM1	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
31.	Map Reduce Types and Formats	1	14-02-2024		TLM1	
32.	Map Reduce Features	1	16-02-2024		TLM1	

No. of classes required to complete UNIT-III: 08 | **No. of classes taken:**

UNIT-IV: Structured Data Processing Tools

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Hive: Installation	1	17-02-2023		TLM1	
34.	Running Hive	1	20-02-2024		TLM1	
35.	Hive QL	1	21-02-2024		TLM1	
36.	Tables, Querying Data	1	23-02-2024		TLM1	
37.	User Defined functions	1	24-02-2024		TLM1	
38.	Sqoop: Introduction	1	27-02-2024		TLM1	
39.	generate code	1	28-02-2024		TLM1	
40.	Database import	1	01-03-2024		TLM1	
41.	working with imported data	1	02-03-2024		TLM1	
42.	Importing large objects	1	05-03-2024		TLM1	
43.	performing an export	1	06-03-2024		TLM1	
44.	Applications	1	12-03-2024		TLM1	

No. of classes required to complete UNIT-IV: 12 | **No. of classes taken:**

UNIT-V: Semi-structured and unstructured Data Processing Tools Pig

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
45.	Introduction to PIG	1	13-03-2024		TLM1	
46.	Execution Modes of Pig	1	15-03-2024		TLM1	
47.	Comparison of Pig with Databases	1	16-03-2024		TLM2	
48.	Grunt, Pig Latin	1	19-03-2024		TLM2	
49.	User Defined Functions	1	20-03-2024		TLM2	
50.	Data Processing operators	1	22-03-2024		TLM2	
51.	HBase: Basics	1	23-03-2024		TLM2	
52.	Concepts, Clients	1	26-03-2024		TLM2	
53.	Example	1	27-03-2024		TLM2	
54.	HBase Versus RDBMS	1	30-03-2024		TLM2	

No. of classes required to complete UNIT-V: 10 | **No. of classes taken:**

CONTENT BEYOND THE SYLLABUS:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	BDA Use case – I	1	26-03-2024		TLM2	
2.	BDA Use case – II	1	27-03-2024		TLM2	
3.	BDA Use case - III	1	30-03-2024		TLM2	

4.	BDA Use case - IV	1	30-03-2023		TLM2	
				No. of classes taken:		

Teaching Learning Methods

TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 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.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 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.
PO 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.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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.
PO 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.
PO 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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools..

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mrs.R.Pavitra	Dr.K.Devi Priya	Dr.K.Phaneendra	Dr. B.Srinivasa Rao
Signature				

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hodit@lbrce.ac.in, Phone: 08659-222933, Fax: 08659-222931
DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: K.RAVITEJA
Course Name & Code   : DATA ANALYTICS AND VISUALIZATION LAB & 20CS62
L-T-P Structure   : 0-0-3   **Credits:** 1.5
Program/Sem/Sec   : B.Tech /VI/A   **A.Y.:** 2023-24

PREREQUISITE: Should have knowledge of one Programming Language (Java preferably), Practice of SQL (queries and sub queries), exposure to Linux Environment

COURSE EDUCATIONAL OBJECTIVE(CE0):
The Objective of the course is to provide practical, foundation level training that enables immediate and effective participation in Big Data and other Analytics projects using Hadoop and Data Visualization using Tableau.

COURSE OUTCOMES (CO):
CO1: Demonstrate the installation of Big data analytic tools. **(Understand–L2)**
CO2: Apply data modeling techniques to large datasets. **(Apply–L3)**
CO3: Conduct exploratory data analysis using visualization. **(Understand–L2)**
CO4: Improve individual / teamwork skills, communication & report writing skills with ethical values.

COURSE ARTICULATION MATRIX (Correlation between Cos, Pos & PSOs):

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	1	-	2	2	-	-	-	-	-	-	1	-	-	-
CO2	2	-	-	3	-	-	-	-	-	-	-	1	-	-	-
CO3	2	1	-	2	2	-	-	-	-	-	-	1	-	-	-
CO4	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-

Note: 1- Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High)

PART-B:

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	Refreshing Linux Commands and Installation of Hadoop	3	04-12-2023		
2.	Implementation of Run a basic Word Count Map Reduce program	3	11-12-2023		
3.	Implementation of Matrix Multiplication with Hadoop Map Reduce	3	18-12-2023		
4.	Implementation of Weather mining by taking weather dataset using Map Reduce	3	01-01-2024		
5.	Installation of Hive along with practice examples	3	08-01-2024		
6.	Installation of Sqoop along with Practice examples	3	15-01-2024		
7.	Downloading and installing Tableau Understanding about importing data, saving, opening, and sharing work books	3	22-01-2024		
8.	Data Preparation with Tableau	3	05-02-2024		
9.	Charts: Bar Charts, Legends, Filters ,and Hierarchies ,Step Charts, Line Charts	3	12-02-2024		
10.	Maps: Symbol Maps, Filled Maps, Density Maps, Maps with Pie Charts	3	19-02-2024		
11.	Interactive Dash boards	3	26-02-2024		
12.	Interactive Dash boards	3	04-03-2024		
13.	Interactive Dash boards and Other Visualization tools	3	11-03-2024 & 18-03-2024		
14.	Lab Internal Exam	3	25-03-2024		

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 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.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 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.
PO 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.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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.
PO 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.
PO 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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools..

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. K.Raviteja	Dr K.Devi Priya	Dr. K.Phaneendra	Dr.B.Srinivasa Rao
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: M. Vijay Kumar
Course Name & Code　　　: Compiler Design, 20CS18
L-T-P Structure　　　　　: 3-0-0　　　　　　　　　　　**Credits:** 03
Program/Sem/Sec　　　　: B.Tech-IT / VI SEM / A
A.Y.　　　　　　　　　　: 2023-24

PRE-REQUISITE: Programming language, and Automata theory and formal languages

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to understand and list the different stages in the process of compilation, identify different methods of lexical analysis, design top-down and bottom-up parsers, develop syntax directed translation schemes, and develop algorithms to generate code for a target machine..

COURSE OUTCOMES (COs): At the end of the course, students will be able to

CO1	Design the lexical analyzer using LEX tool. (Apply- L3)
CO2	Design a parser using top-down and bottom-up parser design methods. (Apply- L3)
CO3	Construct syntax-directed translator for semantic checking and intermediate code generation Using YACC tool (Apply –L3)
CO4	Demonstrate the machine dependent and machine independent code optimization techniques. (Understand-L2)
CO5	Understand the design issues of the code generator and run-time environment of the program. (Understand-L2)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

CO	Program Outcomes (POs)												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	2											2	1	
CO2	3	2												1	
CO3	3	2												2	3
CO4	3	2											2	2	2
CO5	1	2												2	2

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
　　1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXTBOOKS:

1. Alfred V.Aho, Jeffrey Ullman, Ravi sethi, "Compilers Principles, Techniques and Tools", Pearson Education, 2nd Edition, 2008.

REFERENCE BOOKS:
1. ParagH.Dave, HimanshuB.Dave ,"Compilers Principles and Practice" , Person Education, First Edition, 2012.

2. Andrew W.appel ,"Modern compiler implementation in C" ,Cambridge, Revised Edition, 2010.
3. http://nptel.ac.in/courses/106108052/(Video lectures for Compiler design)

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Compiler &v Lexical Analysis

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Language Processing System	1	04/12/23		**TLM1**	CO1	
2.	Compiler Vs Interpreter	1	05/12/23		**TLM1**	CO1	
3.	The Phases of Compiler	1	06/12/23		**TLM1**	CO1	
4.	The Phases of Compiler	1	07/12/23		**TLM1**	CO1	
5.	Compiler Construction Tools	1	11/12/23		**TLM1**	CO1	
6.	Boot Strapping Concept	1	12/12/23		**TLM2**	CO1	
7.	The Role of Lexical Analyzer	1	14/12/23		**TLM2**	CO1	
8.	Input Buffering	1	15/12/23		**TLM2**	CO1	
9.	Input Buffering	1	18/12/23		**TLM2**	CO1	
10.	Specification of Tokens	1	19/12/23		**TLM2**	CO1	
11.	Recognition of Tokens	1	21/12/23		**TLM1**	CO1	
12.	LEX Tools	1	22/12/23		**TLM1**	CO1	
13.	Examples on LEX Tool	1	26/12/23		**TLM1**	CO1	
No. of classes required to complete UNIT-I		13	No. of classes taken:				

UNIT-II: Syntax Analyzer & TOP Down Parsing

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	The Role of parser	1	28/12/23		**TLM1**	CO2	
2.	Writing a Grammar	1	29/12/23		**TLM1**	CO2	
3.	Elimination of left recursion	1	02/1/24		**TLM2**	CO2	
4.	Left factoring	1	04/1/24		**TLM1**	CO2	

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
5.	Recursive decent parsing	1	04/1/24		**TLM1**	CO2	
6.	Predictive Parsing	1	05/1/24		**TLM1**	CO2	
7.	Pre-processing steps required for predictive parsing	1	08/1/24		**TLM2**	CO2	
8.	LL(1) Grammar	1	09/1/24		**TLM1**	CO2	
9.	Examples on LL(1) Parser	1	11/1/24		**TLM1**	CO2	
10.	Error recovery in predictive parsing temple	1	12/1/24		**TLM1**	CO2	
11.	Backtracking	1	16/1/24		**TLM1**	CO2	
No. of classes required to complete UNIT-2		11	No. of classes taken:				

UNIT – III: Bottom-Up parsing

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Handle pruning	1	18/1/24		**TLM1**	CO3	
2.	Shift reduce Parsing	1	19/1/24		**TLM1**	CO3	
3.	Operator precedence Parsing	1	22/1/24		**TLM1**	CO3	
4.	SLR parser	1	23/1/24		**TLM1**	CO3	
5.	Examples on SLR parser	1	25/1/24		**TLM2**	CO3	
6.	CLR parser	1	28/1/24		**TLM1**	CO3	
7.	Examples on CLR parser	1	05/2/24		**TLM1**	CO3	
8.	LALR parser	1	06/2/24		**TLM1**	CO3	
9.	Examples on LALR Parser	1	08/2/24		**TLM2**	CO3	
10.	Handling Ambiguous Grammar	1	09/2/24		**TLM2**	CO3	
11.	Error recovery in LR parser	1	12/2/24		**TLM2**	CO3	
12.	YACC-Automatic parser Generator	1	13/2/24		**TLM2**	CO3	
No. of classes required to complete UNIT-3		12	No. of classes taken:				

UNIT-IV: Syntax Directed Translation & Intermediate Code Generation

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Syntax directed definitions	1	15/2/24		**TLM1**	CO4	
2.	Evaluation order of SDD's	1	16/2/24		**TLM1**	CO4	
3.	Application of SDD	1	19/2/24		**TLM1**	CO4	
4.	Syntax directed Translation schemes	1	20/2/24		**TLM1**	CO4	
5.	Syntax directed Translation schemes	1	22/3/24		**TLM1**	CO4	
6.	Syntax Tree	1	23/2/24		**TLM1**	CO4	
7.	Polish Notation	1	26/2/24		**TLM1**	CO4	
8.	Three Address Code	1	27/2/24		**TLM1**	CO4	
9.	Static single assignment	2	01/3/23		**TLM1**	CO4	
10.	Translation of expressions and control flow statements-Boolean expressions	2	05/3/24		**TLM1**	CO4	
No. of classes required to complete UNIT-4		12	No. of classes taken:				

UNIT-V: Code Optimization & Code Generation

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Basic blocks and flow graphs	1	07/3/24		**TLM1**	CO5	
2.	Principle Sources of optimization	2	12/3/24		**TLM1**	CO5	
3.	Loop Optimization	2	15/3/24		**TLM1**	CO5	
4.	Design issues & Object code forms	1	18/03/24		**TLM1**	CO5	
5.	Optimization of Basic Blocks	1	19/03/24		**TLM1**	CO5	
6.	DAG Representation of basic blocks	1	21/03/24		**TLM1**	CO5	
7.	Code Generation using DAG	1	22/03/24		**TLM1**	CO5	
8.	A simple Code Generator	1	25/03/24		**TLM1**	CO5	
9.	Peephole Optimization	1	26/03/24		**TLM1**	CO5	
10.	Register Allocation and assignment	1	28/03/24		**TLM1**	CO5	
No. of classes required to complete UNIT-5		12	No. of classes taken:				

TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/SWAYAM/MOOCS)
TLM3	Tutorial	TLM6	Group Discussion/Project

EVALUATION PROCESS:

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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PO 8	**Ethics**: Apply ethical principles and commit to professional ethics, responsibilities, and norms of the engineering practice.

PO 9	**Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the enginee**ring 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
PO 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. M.VijayKumar	Dr. D Veeraiah	Mr. G. Rajendra	Dr. B.Srinivasarao
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. REHANA BEGUM
Course Name & Code   **:** Compiler Design, 20CS18
L-T-P Structure   **: 3-0-0**   **Credits:** 03
Program/Sem/Sec   : B.Tech-IT / VI SEM / B
A.Y.   **:** 2023-24

PRE-REQUISITE: Programming language, and Automata theory and formal languages

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to understand and list the different stages in the process of compilation, identify different methods of lexical analysis, design top-down and bottom-up parsers, develop syntax directed translation schemes, and develop algorithms to generate code for a target machine..

COURSE OUTCOMES (COs): At the end of the course, students will be able to

CO1	Design the lexical analyzer using LEX tool. (Apply- L3)
CO2	Design a parser using top-down and bottom-up parser design methods. (Apply- L3)
CO3	Construct syntax-directed translator for semantic checking and intermediate code generation Using YACC tool (Apply –L3)
CO4	Demonstrate the machine dependent and machine independent code optimization techniques. (Understand-L2)
CO5	Understand the design issues of the code generator and run-time environment of the program. (Understand-L2)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

CO	Program Outcomes (POs)												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	2											2	1	
CO2	3	2												1	
CO3	3	2												2	3
CO4	3	2											2	2	2
CO5	1	2												2	2

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
     1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXTBOOKS:

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1. ParagH.Dave, HimanshuB.Dave, "Compilers Principles and Practice", Person Education, First Edition, 2012.

2. Andrew W.appel ,"Modern compiler implementation in C" ,Cambridge, Revised Edition, 2010.
3. http://nptel.ac.in/courses/106108052/(Video lectures for Compiler design)

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Compiler &v Lexical Analysis

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Language Processing System	1	04/12/23		**TLM1**	CO1	
2.	Compiler Vs Interpreter	1	05/12/23		**TLM1**	CO1	
3.	The Phases of Compiler	1	06/12/23		**TLM1**	CO1	
4.	The Phases of Compiler	1	09/12/23		**TLM1**	CO1	
5.	Compiler Construction Tools	1	11/12/23		**TLM1**	CO1	
6.	Boot Strapping Concept	1	12/12/23		**TLM2**	CO1	
7.	The Role of Lexical Analyzer	1	13/12/23		**TLM2**	CO1	
8.	Input Buffering	1	16/12/23		**TLM2**	CO1	
9.	Input Buffering	1	18/12/23		**TLM2**	CO1	
10.	Specification of Tokens	1	19/12/23		**TLM2**	CO1	
11.	Recognition of Tokens	1	20/12/23		**TLM1**	CO1	
12.	LEX Tools	1	23/12/23		**TLM1**	CO1	
13.	Examples on LEX Tool	1	26/12/23		**TLM1**	CO1	
No. of classes required to complete UNIT-I		13	No. of classes taken:				

UNIT-II: Syntax Analyzer & TOP Down Parsing

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	The Role of parser	1	27/12/23		**TLM1**	CO2	
2.	Writing a Grammar	1	30/12/23		**TLM1**	CO2	
3.	Elimination of left recursion	1	01/1/24		**TLM2**	CO2	
4.	Left factoring	1	02/1/24		**TLM1**	CO2	
5.	Recursive decent parsing	1	03/1/24		**TLM1**	CO2	

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
6.	Predictive Parsing	1	06/1/24		**TLM1**	CO2	
7.	Pre-processing steps required for predictive parsing	1	08/1/24		**TLM2**	CO2	
8.	LL(1) Grammar	1	09/1/24		**TLM1**	CO2	
9.	Examples on LL(1) Parser	1	10/1/24		**TLM1**	CO2	
10.	Error recovery in predictive parsing temple	1	16/1/24		**TLM1**	CO2	
11.	Backtracking	1	17/1/24		**TLM1**	CO2	
No. of classes required to complete UNIT-2		11	No. of classes taken:				

UNIT – III: Bottom-Up parsing

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Handle pruning	1	20/1/24		**TLM1**	CO3	
2.	Shift reduce Parsing	1	22/1/24		**TLM1**	CO3	
3.	Operator precedence Parsing	1	23/1/24		**TLM1**	CO3	
4.	SLR parser	1	24/1/24		**TLM1**	CO3	
5.	Examples on SLR parser	1	27/1/24		**TLM2**	CO3	
6.	CLR parser	1	05/2/24		**TLM1**	CO3	
7.	Examples on CLR parser	1	06/2/24		**TLM1**	CO3	
8.	LALR parser	1	07/2/24		**TLM1**	CO3	
9.	Examples on LALR Parser	1	10/2/24		**TLM2**	CO3	
10.	Handling Ambiguous Grammar	1	12/2/24		**TLM2**	CO3	
11.	Error recovery in LR parser	1	13/2/24		**TLM2**	CO3	
12.	YACC-Automatic parser Generator	1	17/2/24		**TLM2**	CO3	
No. of classes required to complete UNIT-3		12	No. of classes taken:				

UNIT-IV: Syntax Directed Translation & Intermediate Code Generation

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Syntax directed definitions	1	19/2/24		**TLM1**	CO4	
2.	Evaluation order of SDD's	1	20/2/24		**TLM1**	CO4	

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
3.	Application of SDD	1	21/2/24		**TLM1**	CO4	
4.	Syntax directed Translation schemes	1	24/2/24		**TLM1**	CO4	
5.	Syntax directed Translation schemes	1	26/2/24		**TLM1**	CO4	
6.	Syntax Tree	1	28/2/24		**TLM1**	CO4	
7.	Polish Notation	1	02/3/24		**TLM1**	CO4	
8.	Three Address Code	1	04/3/24		**TLM1**	CO4	
9.	Static single assignment	2	05/3/24		**TLM1**	CO4	
10.	Translation of expressions and control flow statements-Boolean expressions	2	09/3/24		**TLM1**	CO4	
No. of classes required to complete UNIT-4		12	No. of classes taken:				

UNIT-V: Code Optimization & Code Generation

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Basic blocks and flow graphs	1	11/03/24		**TLM1**	CO5	
2.	Principle Sources of optimization	2	12/03/24		**TLM1**	CO5	
3.	Loop Optimization	2	13/03/24		**TLM1**	CO5	
4.	Design issues & Object code forms	1	16/03/24		**TLM1**	CO5	
5.	Optimization of Basic Blocks	1	18/03/24		**TLM1**	CO5	
6.	DAG Representation of basic blocks	1	19/03/24		**TLM1**	CO5	
7.	Code Generation using DAG	1	20/03/24		**TLM1**	CO5	
8.	A simple Code Generator	1	23/03/24		**TLM1**	CO5	
9.	Peephole Optimization	1	26/03/24		**TLM1**	CO5	
10.	Register Allocation and assignment	1	27/03/24 30/03/24		**TLM1**	CO5	
No. of classes required to complete UNIT-5		12	No. of classes taken:				

TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/SWAYAM/MOOCS)
TLM3	Tutorial	TLM6	Group Discussion/Project

EVALUATION PROCESS:

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 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.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 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.

PO 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
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the enginee**ring 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
PO 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mrs. Rehana Begum	Dr. D Veeraiah	Mr. G. Rajenda	Dr. B.Srinivasarao
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: PAVITRA RAMACHANDRAPURAM
Course Name & Code : DATA ANALYTICS AND VISUALIZATION LAB & 20CS62
L-T-P Structure : 0-0-3 **Credits:** 1.5
Program/Sem/Sec : B.Tech /VI/B **A.Y.:** 2023-24

PREREQUISITE: Should have knowledge of one Programming Language (Java preferably), Practice of SQL (queries and sub queries), exposure to Linux Environment

COURSE EDUCATIONAL OBJECTIVE(CE0):
The Objective of the course is to provide practical, foundation level training that enables immediate and effective participation in Big Data and other Analytics projects using Hadoop and Data Visualization using Tableau.

COURSE OUTCOMES (CO):
CO1: Demonstrate the installation of Big data analytic tools. **(Understand–L2)**
CO2: Apply data modeling techniques to large datasets. **(Apply–L3)**
CO3: Conduct exploratory data analysis using visualization. **(Understand–L2)**
CO4: Improve individual / teamwork skills, communication & report writing skills with ethical values.

COURSE ARTICULATION MATRIX (Correlation between Cos, Pos & PSOs):

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	1	-	2	2	-	-	-	-	-	-	1	-	-	-
CO2	2	-	-	3	-	-	-	-	-	-	-	1	-	-	-
CO3	2	1	-	2	2	-	-	-	-	-	-	1	-	-	-
CO4	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-

Note: 1- Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High)

PART-B:

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	Refreshing Linux Commands and Installation of Hadoop	3	07-12-2023		
2.	Implementation of Run a basic Word Count Map Reduce program	3	14-12-2023		
3.	Implementation of Matrix Multiplication with Hadoop Map Reduce	3	21-12-2023		
4.	Implementation of Weather mining by taking weather dataset using Map Reduce	3	28-12-2023		
5.	Installation of Hive along with practice examples	3	04-01-2024		
6.	Installation of Sqoop along with Practice examples	3	11-01-2024		
7.	Downloading and installing Tableau Understanding about importing data, saving, opening, and sharing work books	3	25-01-2024		
8.	Data Preparation with Tableau	3	01-02-2024		
9.	Charts: Bar Charts, Legends, Filters ,and Hierarchies ,Step Charts, Line Charts	3	08-02-2024		
10.	Maps: Symbol Maps, Filled Maps, Density Maps, Maps with Pie Charts	3	15-02-2024		
11.	Interactive Dash boards	3	22-02-2024		
12.	Interactive Dash boards	3	29-02-2024		
13.	Interactive Dash boards	3	14-02-2024		
14.	Lab Internal Exam	3	28-02-2024		

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 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.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 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.
PO 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.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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.
PO 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.
PO 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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools..

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mrs.R Pavitra**			**Dr.B.Srinivasa Rao**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT
PART-A

Name of Course Instructor: Ms. K. Sridevi
Course Name & Code : Soft Skills & 20HSS1
L-T-P Structure : 1-0-2   **Credits:** 02
Program/Sem/Sec : B. Tech- VI SEM- IT-B
Academic Year : 2023-24

PREREQUISITE: NIL

Course Educational Objectives:

The Soft Skills Laboratory course equips students with required behavioral, interpersonal & Intrapersonal skills, communication skills, leadership skills etc. It aims at training undergraduate students on soft skills leading to enhanced self-confidence, esteem, and acceptability in professional circles.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	To Develop self-awareness and personality traits for professional growth.	L2
CO2	Work effectively in multi-disciplinary and heterogeneous teams through knowledge of teamwork, Inter-personal relationships, conflict management and leadership quality.	L3
CO3	Communicate through verbal/oral communication with good listening skills and empathy.	L3
CO4	Apply skills required to qualify in recruitment tests, Interviews & other professional assignments.	L3

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

Course Outcomes PO's →	Programme Outcomes											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.					2			3	3	3		2
CO2.					2			3	3	3		3
CO3.					2			3	3	3		3
CO4.					2			3	3	3		2

1 = Slight (Low)   2= Moderate (Medium)   3 = Substantial (High)

List of Activities:

1.Personality Development Skills

Role of language in Personality – How language reflects, impacts Personality – Using gender- neutral language in MNCs – being Culturally-Sensitive-Personality Traits - Grooming & Dress code

Activities: Group Discussion/Role play/Presentations (authentic materials: Newspapers, pamphlets and News Clippings)

2.Impactful Communication

Activities: Extempore / Story Telling/ Group Discussion (Case studies/Current affairs etc.)/ Elocution on Interpretation of given quotes/ Critical Appreciation and Textual Analysis/ Writing reviews on short story/videos/book/Social Media profiling/ Pronunciation Practice

3.Professional Skills:

Career Planning- job vs. career- goal setting- SWOT Analysis-Time management – self-management – stress-management.

Activities: SWOT analysis of the self/Goal Setting-Presentation/Writing Report/Listening exercises/Effective Resume-Writing and presentation/ Interview Skills: Mock interviews/Video samples.

REFERENCES:

1. Edward Holffman, "Ace the Corporate Personality", McGraw Hill,2001
2. Adrian Furnham, Personality and Intelligence at Work, Psyc 2. hology Press, 2008.
3. M.Ashraf Rizvi, "Effective Technical Communication", 1 st edition, Tata cGrawHill, 2005.
4. Ace of Soft skills Gopalaswamy Ramesh, Pearson Education India, 2018
5. Soft Skills for the Workplace, Good heart - Willcox Publisher · 2020.
6. How to Win Friends and Influence People, Dale Carnegie · 2020

Software: Walden InfoTech

COURSE DELIVERY PLAN (LESSON PLAN)

| S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign weekly
1.	Activity-1:Role of language in Personality- How language reflects, impacts Personality – Using gender	1+2	06-12-2023		TLM-1, 2& 6.	
2.	Neutral language in MNCs – being Culturally-Sensitive-Personality Traits - Grooming & Dress code& Role-play	1+2	13-12-2023		TLM-1, 2 &6.	

3.	Group Discussion	1+2	20-12-2023		TLM-1, 2& 6.	
4.	Group Discussion	1+2	27-12-2023		TLM-1, 2& 6.	
5.	Presentations	1+2	03-01-2024		TLM-1, 2& 6.	
6.	Activity-2: Impactful Communication Extempore - Story Telling	1+2	10-01-2024		TLM-1, 2& 6.	
7.	Extempore -Group Discussion	1+2	24-01-2024		TLM-1, 2& 6.	
8.	Elocution on Interpretation of given quotes/ Critical Appreciation and Textual Analysis/ Writing	1+2	07-02-2024		TLM-1, 2& 6.	
9.	reviews on short story/videos/book/Social Media profiling/ Pronunciation Practice	1+2	14-02-2024		TLM-1, 2& 6.	
10.	Activity-3: Professional Skills: Career planning- job vs. career- goal setting	1+2	21-02-2024		TLM-1, 2& 6.	
11.	SWOT Analysis	1+2	28-02-2024		TLM-1, 2& 6.	
12.	Time management – self-management – stress-management.	1+2	06-03-2024		TLM-1, 2& 6.	
13.	Presentation/Writing Report/Listening exercises	1+2	13-03-2023		TLM-1, 2& 6.	
14.	Effective Resume-Writing and presentation	1+2	20-03-2024		TLM-1, 2& 6.	
15.	Interview Skills: Mock interviews/Video samples.	1+2	27-03-2024		TLM-1, 2& 6.	

No. of classes required to complete Syllabus: 45

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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PO 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
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PO 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
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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
PO 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.
PO 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.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Ms. K. Sridevi**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. A. Ramireddy**
Signature				
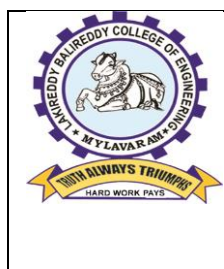
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DEPARTMENT OF INFORMATION TECHNOLOGY

PROGRAM   : B.Tech., VI-Sem., IT – R20 Regulation
ACADEMIC YEAR   : 2022-23
COURSE NAME & CODE : Information Security Lab(20CS61)
L-T-P STRUCTURE   : 0-0-2
COURSE CREDITS   : 1
COURSE INSTRUCTOR   : D.VIJAYA SRI

Course Educational Objective: The objective of this lab is learn the various symmetric and public key encryption algorithm along with transposition and substitution techniques.

Course Outcomes (CO): At the end of this course, the student will be able to:

CO1:	Demonstrate the security concepts, type of attacks and network security algorithms. (Understand - L2)
CO2:	Apply symmetric and asymmetric cryptography technique to encrypt and decrypt text. (Apply - L3)
CO3:	Apply network-based tools for network analysis.(Apply - L3)
CO 4:	Improve individual / teamwork skills, communication & report writing skills with ethical values.

COURSE ARTICULATION MATRIX (Correlation between Cos & POs, PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	2	1	-	-	-	-	-	-	-	-	-		2	
CO2	2	2	1	-	-	-	-	-	-	-	-	-		2	
CO3	2	1	-	2	2	-	-	-	-	-	-	-		2	
CO4	-	-	-	-	-	-	-	2	1	-	-	-		2	

1- Slight(Low), 2 - Moderate(Medium), 3 - Substantial (High).

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

S.NO	List Of Programmes	Tentative Date of Completion	Actual Date of Completion	Signature
1	Implement any two Substitution Techniques.	A:8-12-23 B:15-12-23	A: B:	
2	Implement any two Transposition Techniques	A:22-12-23 B:22-12-23	A: B:	
3	Implement any two Symmetric algorithms.	A: 29-12-23 B: 29-12-23	A: B:	
4	Implement any two Private -Key based algorithms.	A: 5-1-24 B: 5-1-24	A: B:	
5	Explore any four network diagnosis tools.	A: 19-1-24 B: 19-1-24	A: B:	
6	Study about Wireshark packet sniffer tool in promiscuous and non-promiscuous mode.	A:9-2-24 B: 9-2-24	A: B:	
7	Download and install nmap. Use it with different options to scan open ports, do a ping scan, tcp port scan, udp port scan.	A: 16-2-24 B: 23-2-24	A: B:	
8	Iptables in linux.	A: 1-3-24 B: 1-3-24	A: B:	
9	Demonstrate intrusion detection system (ids) using any tool (snort or any other s/w).	A: 15-3-24 B: 15-3-24	A: B:	
10	Lab Internal Exam	22-3-24		

Course Instructor	Coordinator	Module Coordinator	Head of the Department
			Dr.B.Srinivasa Rao

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DEPARTMENT OF INFORMATION TECHNOLOY

COURSE HANDOUT

PART-A

Name of Course Instructor : D.VIJAYA SRI
Course Name & Code : Information Security (20CS17)
L-T-P Structure : 3-0-0   **Credits** : 3
Program/Sem/Sec : B.Tech., IT., VI-Sem. B Secion,   **A.Y** : 2023-24

PRE-REQUISITE: Principles of Computer networks, Data transfer mechanisms in Internet. Security aspects in Internet and Data communication networks and storage media

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course elevates the security aspects and provides the knowledge to understand the basic concept of Cryptography and Network Security principles. It antilight's different types of cipher mechanisms and various symmetric and asymmetric algorithms. Also provides the knowledge on digital signatures, different threats, viruses, intruders and firewalls.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Summarize encryption algorithms to achieve data confidentiality. (Understand-L2)
CO 2	Apply secure hash functions for attaining data integrity. (Apply-L3)
CO 3	Illustrate the email security mechanism to achieve authentication. (Understand-L2)
CO 4	Demonstrate the techniques of web security,(Understand-L2)
CO 5	Examine the threats and remedial measures for system security. (Understand-L2)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	-	-		2	
CO2	3	2	-	-	-	-	-	-	-	-	-	-		2	
CO3	3	2	-	-	-	-	-	-	-	-	-	-		2	
CO4	2	3	-	-	-	-	-	-	-	-	-	-		2	
CO5	2	2	-	-	-	-	-	-	-	-	-	-		2	

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
   1- Slight (Low), **2** – Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:
 T1 William Stallings, Network Security Essentials (Applications and Standards), Pearson Education.

REFERENCE BOOKS:

R1	Stallings, Cryptography and Network Security, PHI/Pearson, Third edition
R2	Whitman, Principles of Information Security, Thomson
R3	Robert Bragg, Mark Rhodes, Network Security: The complete reference, TMH
R4	Buchmann, Springer Introduction to Cryptography

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction: Security Services	1	04/12/23		TLM1	
2.	Security Mechanisms	1	05/12/23		TLM1	
3.	A Model for internetwork security	1	06/12/23		TLM1	
4.	Internet standards and RFCs	1	09/12/23		TLM1	
5.	Conventional encryption principals	1	11/12/23		TLM1	
6.	Conventional encryption algorithm(DES, triple DES)	2	12/12/23 13/12/23		TLM1	
7.	Cipher block modes of operation (CBC,CFB)	2	16/12/23 18/12/23		TLM1	
8.	Location of encryption devices	1	19/12/23		TLM1	
9.	Key distribution	1	20/12/23		TLM1	
10.	Approaches to message authentication	1	23/12/23		TLM1	
11.	Secure hash function and HMAC	1	26/12/23		TLM1	
No. of classes required to complete UNIT-I: 13				No. of classes taken:		

UNIT-II: PUBLIC -KEY CRYPTOGRAPHY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Public Key Cryptography principles	1	27/12/23		TLM1	
2.	Public key cryptography algorithms	1	30/12/23		TLM1	
3.	Digital Signature	2	01/1/24 02/1/24		TLM1	
4.	Digital certificates	2	03/1/24 06/1/24		TLM1	
5.	Certificate authority and key management	2	08/1/24 09/1/24		TLM1	
6.	Kerberos	2	10/1/24 16/1/24		TLM1	
7.	X.509	1	17/1/24		TLM1	
8.	Directory authentication service	1	20/1/24		TLM1	
9.	Revision of Unit-I,II	3	22/1/24 23/1/24 24/1/24			
No. of classes required to complete UNIT-II: 15				No. of classes taken:		

UNIT-III: EMAIL PRIVACY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Pretty good privacy(PGP)	1	27/1/24		TLM1	
2.	S/MIME	1	05/2/24		TLM1	
3.	IP Security overview	1	06/2/24		TLM1	
4.	IP Security architecture	2	07/2/24 10/2/24		TLM1	
5.	Authentication header	1	12/2/24		TLM1	
6.	Encapsulating security payload	1	13/2/24		TLM1	
7.	Combining Security associations	1	17/2/24		TLM1	
No. of classes required to complete UNIT-III: 08				No. of classes taken:		

UNIT-IV : WEB SECURITY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Web Security Requirements	2	19/2/24 20/2/24		TLM1	
2.	Secure Socket layer(SSL)	2	21/2/24 24/2/24		TLM1	
3.	Transport layer security(TLS)	2	28/2/24		TLM1	
4.	Secure Electronic Transaction(SET)	3	02/3/24 04/3/24 05/3/24		TLM1	
No. of classes required to complete UNIT-IV: 09				No. of classes taken:		

UNIT-V : INTRUDERS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Intruders	2	09/3/24		TLM1	
2.	Viruses	2	11/03/24 12/03/24		TLM1	
3.	Related threats	2	13/03/24		TLM1	
4.	Firewall	2	16/03/24 18/03/24		TLM1	
5.	Design Principles	2	19/03/24 20/03/24		TLM1	
6.	Trusted Systems	1	23/03/24		TLM1	
7.	REVISION	3	26/03/24 27/03/24 30/03/24			
No. of classes required to complete UNIT-V: 11				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 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.
PO 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
PO 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
PO 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.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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.
PO 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.
PO 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty				Dr. B.Srinivasarao
Signature				

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COURSE HANDOUT
PART-A

Name of Course Instructor   : B NARASIMHARAO
Course Name & Code   : DISASTER MANAGEMENT & 20CE82
L-T-P Structure   : 3-0-0   Credits : 3
Program/Sem/Sec   : B.Tech., IT-A/VI-Sem.,   A.Y : 2023-24

PRE-REQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course deals with different types of disasters, impacts of disasters, importance of technology in handling disaster management situations, importance of planning and risk prevention in case of occurrence of disaster, importance of education and community approach for the responsive actions to be taken in case of occurrence of disaster.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Identify the basic terms, types of disasters and their impact (Understand – L2)
CO 2	Illustrate the role of technology in handling disaster management situations (Understand-L2)
CO 3	Identify the stake-holders concerned and design the different action plans for responding in case of disaster occurrence (Understand – L2)
CO 4	Evaluate the importance of education and community approach for the responsive actions to be taken in case of disaster occurrence (Understand – L2)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	-	1	2	1	-	-	-	-	-	1	2	1	2
CO2	1	1	1	2	2	1	-	-	-	-	-	1	2	1	2
CO3	1	-	-	1	2	1	1	1	-	-	-	1	1	1	2
CO4	1	-	-	1	1	1	1	1	1	1	1	1	1	1	2

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
     1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:
   T1   Tushar Bhattacharya, "Disaster Science and Management", Tata McGraw Hill Publications, New Delhi, 2012.
   T2   R.Subramanian, "Disaster Management ", Vikas Publishing house Pvt. Ltd, 2022.

REFERENCE BOOKS:
   R1   G.K. Ghosh, "Disaster Management", APH Publishing Corporation, 2006.
   R2   U.K. Chakrabarty, "Industrial Disaster Management and Emergency Response", Asian Books Pvt. Ltd., New Delhi 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT –I: DEFINITIONS & TYPES OF DISASTER

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Disaster Management	1	04.12.2023		TLM2	
2.	Basic definitions	1	06.12.2023		TLM2	
3.	Types of Disasters	1	08.12.2023		TLM2	
4.	Concept of disaster management	1	11.12.2023		TLM2	
5.	Disaster management cycle	1	13.12.2023		TLM2	
6.	Vulnerability	1	15.12.2023		TLM2	
7.	Mitigation	1	16.12.2023		TLM2	
8.	Natural disasters: Drought and cyclone	1	18.12.2023		TLM2	
9.	Natural disasters: Earthquake and landslides	1	20.12.2023		TLM2	
10.	Engineering and technical failure	1	22.12.2023		TLM2	
11.	Nuclear and chemical disaster	1	23.12.2023		TLM2	
12.	Accident-related disasters	1	27.12.2023		TLM2	
13.	HPC on DM in India- DM Act 2005	1	29.12.2023		TLM2	
14.	Revision		30.12.2023		TLM2	
No. of classes required to complete UNIT-I:14				No. of classes taken:		

UNIT-II: IMPACT OF DISASTERS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Impacts due to earthquake and cyclone	1	03.01.2024		TLM2	
2.	Impacts due to landslides and fire hazards	1	05.01.2024		TLM2	
3.	Impacts due to life &live stock and habitation	1	06.01.2024		TLM2	
4.	Agriculture & livelihood loss- health hazards	1	08.01.2024		TLM2	
5.	Malnutrition problems	1	10.01.2024		TLM2	
6.	Contamination of water	1	12.01.2024		TLM2	
7.	Impact on children- environmental loss	1	17.01.2024		TLM2	
8.	Revision		19.01.2024		TLM2	
No. of classes required to complete UNIT-II:07				No. of classes taken:		

UNIT-III: ROLE OF TECHNOLOGY IN DISASTER MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Role of remote sensing	1	20.01.2024		TLM2	
2.	Information system and decision-making tool	1	22.01.2024		TLM2	
3.	DM for infra structure	1	24.01.2024		TLM2	
4.	DM for electrical substances	1	27.01.2024		TLM2	
5.	DM for roads and bridges	1	05.02.2024		TLM2	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
6.	Mitigation programme for earthquakes	1	**07.02.2024**		**TLM2**	
7.	Geospatial information in agriculture drought assessment	1	**09.02.2024**		**TLM2**	
8.	Multimedia technology in disaster risk management and training	1	**12.02.2024**		**TLM2**	
9.	Transformable indigenous knowledge in disaster reduction	1	**14.02.2024**		**TLM2**	
10.	Transformable indigenous knowledge in disaster reduction	1	**16.02.2024**		**TLM2**	
11.	Revision		**17.02.2024**		**TLM2**	
No. of classes required to complete UNIT-III:10				No. of classes taken:		

UNIT- IV: PLANNING & RISK PREVENTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	**19.02.2024**		**TLM2**	
2.	Planning	1	**21.02.2024**			
3.	Early warning system	1	**23.02.2024**		**TLM2**	
4.	Crisis intervention and management	1	**24.02.2024**		**TLM2**	
5.	Response and Rehabilitation after Disasters	1	**26.02.2024**		**TLM2**	
6.	Temporary shelter – food and nutrition-safe drinking water	1	**28.02.2024**		**TLM2**	
7.	Rehabilitation after cyclones	1	**01.03.2024**		**TLM2**	
8.	Response to drought	1	**02.03.2024**		**TLM2**	
9.	Response to river erosion	1	**04.03.2024**		**TLM2**	
10.	Response after earthquake	1	**06.03.2024**		**TLM2**	
11.	Response after Tsunami- Hunger and Disaster	1	**08.03.2024**		**TLM2**	
No. of classes required to complete UNIT-IV:10				No. of classes taken:		

UNIT-V: EDUCATION AND COMMUNITY PREPAREDNESS & CASE STUDIES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	**11.03.2024**		**TLM2**	
2.	Essentials of disaster education	1	**13.03.2024**			
3.	School awareness and safety programs, Community based disaster recovery	1	**15.03.2024**		**TLM2**	
4.	Voluntary agencies and community participation at various stages of disaster management	1	**16.03.2024**		**TLM2**	
5.	Building community capacity for action	1	**18.03.2024**		**TLM2**	
6.	Corporate sector and disaster risk reduction	1	**20.03.2024**		**TLM2**	
7.	A community focused approach	1	**22.03.2024**		**TLM2**	
8.	Case studies on different disasters in the world-1	1	**23.03.2024**		**TLM2**	
9.	Case studies on different disasters in the world-2	1	**27.03.2024**		**TLM2**	
10.	Case studies on different disasters in	1	**29.03.2024**		**TLM2**	

	the world-3					
11.	Case studies on different disasters in the world-4	1	**30.03.2024**		**TLM2**	
No. of classes required to complete UNIT-V:10				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=15
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=15
II-Quiz Examination (Units-III, IV & V)	Q2=10
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
CIE-I (Mid-I, Assignment-I. Quiz-I)	30
CIE-II (Mid-II, Assignment-II. Quiz-II)	30
Cumulative Internal Examination (CIE): 80% best and 20% least	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 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.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 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.
PO 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.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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.
PO 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.
PO 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering
PSO 2	Possesses ability to plan, examine and analyze the various laboratory tests required for the professional demands
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain

Course Instructor	Course Coordinator	Module Coordinator	HOD
(B NARASIMHARAO)	(B NARASIMHARAO)	(B NARASIMHARAO)	(Dr.J.V.R)

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. Ch.Poorna Venkata Srinivasa Rao
Course Name & Code   : Data Science & 20IT04
L-T-P Structure   : 3-0-0   **Credits:** 3
Program/Sem/Sec   : B.Tech/VI/B   **A.Y.**   : 2023-24

PREREQUISITE   : Python Programming

COURSE EDUCATIONAL OBJECTIVES (CEOs) :

COURSE OUTCOMES (COs)   : At the end of the course, student will be able to

CO1	Understand basic introduction concepts of Data science **(L2-Understand)**
CO2	Explore how to describe data **(L2-Understand)**
CO3	Apply mathematical concepts to prepare data tables **(L3-Apply)**
CO4	Identify relations and groups in data science **(L2-Understand)**
CO5	Analyze machine learning models **(L3-Apply)**

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2												2		
CO2		2												2	
CO3		2	3											2	
CO4	2													2	
CO5		2	2											2	
	1 - Low			**2 –**Medium				**3 -** High							

TEXTBOOKS:

T1 A Making sense of Data: A practical Guide to Exploratory Data Analysis and Data Mining, 2nd Edition, Glenn J. Myatt, Wiley, 2014.

T2 Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, EMC Education services, 2015.

REFERENCE BOOKS:

R1 Python Data Science Handbook,1st Edition, Jake VanderPlas, O'Reilly, 2017.

PART-B - COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION TO DATA SCIENCE

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Course Outcomes and Introduction to Data Science Course	1	07/12/23		TLM1	
2.	Introduction to Data Science	1	08/12/23		TLM1	
3.	Introduction to Data Science, Data Analysis Life Cycle Overview.	1	09/12/23		TLM2	
4.	Introduction to Data Science, Data Analysis Life Cycle Overview.	1	13/12/23		TLM2	
5.	Data analysis Discovery, Framing Problem, Developing Initial Hypothesis	1	14/12/23		TLM1	
6.	Sources of Data, Process for Making Sense of Data, Data Preparation, Performing ETLT, Data Conditioning, Survey and Visualize,	1	15/12/23		TLM1	
7.	Common tools for Data Preparation Phase, Data Exploration and Variable Selection	1	16/12/23		TLM1	
8.	Common tools for the Model Planning and Building Phase, Communicate Results, Operationalize	1	20/12/23		TLM1	
9.	Revision of UNIT-1 & Assignment-I	1	21/12/23		TLM1	
No. of classes required to complete UNIT-I: 9				**No. of classes taken:**		

UNIT-II: DESCRIBING DATA

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
10.	Course Outcomes and Introduction to Describing Data	1	22/12/23		TLM1	
11.	Observations and Variables	1	23/12/23		TLM1	
12.	Types of Variables	1	27/12/23		TLM1	
13.	Central Tendency	1	28/12/23		TLM2	
14.	Distribution of the Data	1	29/12/23		TLM2	
15.	Confidence Intervals	1	30/12/23		TLM2	
16.	Hypothesis Tests	1	03/01/24		TLM2	
17.	Student t-test	1	04/01/24		TLM1	
18.	Student t-test	1	05/01/24		TLM1	
19.	Revision of UNIT-2 & Assignment-II	1	06/02/24		TLM1	
No. of classes required to complete UNIT-II : 10				**No. of classes taken:**		

UNIT-III: PREPARING DATA TABLES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
20.	Course Outcomes and Introduction to Preparing Data Tables	1	10/01/24		TLM1	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
21.	Cleaning the Data	1	11/01/24		TLM1	
22.	Removing Observations and Variables	1	12/01/24		TLM1	
23.	Generating Consistent Scales across Variables	1	13/01/24		TLM2	
24.	Generating Consistent Scales across Variables	1	17/01/24		TLM2	
25.	New Frequency Distribution	1	18/01/24		TLM1	
26.	Revision For MID1	1	19/01/24			
27.	Revision For MID1	1	20/01/24			
28.	Revision For MID1	1	24/01/24			
29.	Converting Continuous Data to Categories	1	25/01/24		TLM1	
30.	Combining Variables	1	27/01/24		TLM1	
31.	Generating Groups	1	07/02/24		TLM1	
32.	Preparing Unstructured Data	1	08/02/24		TLM2	
33.	Revision of UNIT-3 & Assignment-III	1	09/02/24			

No. of classes required to complete UNIT-III: 14   **No. of classes taken:**

UNIT-IV: UNDERSTANDING RELATIONSHIPS & IDENTIFYING AND UNDERSTANDING GROUPS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
34.	Course Outcomes and Introduction to Understanding Relationships & Identifying and Understanding Groups	1	10/02/24		TLM1	
35.	Visualizing Relationships between Variables	1	14/02/24		TLM2	
36.	Visualizing Relationships between Variables	1	15/02/24		TLM2	
37.	Visualizing Relationships between Variables	1	16/02/24		TLM2	
38.	Calculating Metrics about Relationships	1	17/02/24		TLM2	
39.	Calculating Metrics about Relationships	1	21/02/24		TLM2	
40.	Calculating Metrics about Relationships	1	22/02/24		TLM2	
41.	Clustering, K-means	1	23/02/24		TLM2	
42.	Association Rules	1	24/02/24		TLM2	
43.	Apriori Algorithm	1	28/02/24		TLM2	
44.	Applications of Association Rules	1	29/02/24		TLM1	
45.	Applications of Association Rules	1	01/03/24		TLM1	
46.	**Revision of UNIT-4 & Assignment-IV**	1	02/03/24			

No. of classes required to complete UNIT-IV: 13   **No. of classes taken:**

UNIT-V: BUILDING MODELS FROM DATA

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
47.	Course Outcomes and Introduction to building models from data	1	06/03/24		TLM1	
48.	Linear Regression	1	13/03/24		TLM2	
49.	Logistic Regression	1	14/03/24		TLM2	
50.	Bayes Theorem	1	16/03/24		TLM2	
51.	Naïve Bayes Classifier	1	21/03/24		TLM2	
52.	k-Nearest Neighbours	1	22/03/24		TLM2	
53.	Learning Decision Trees from Data	1	23/03/24		TLM2	
54.	Revision of UNIT-5 & Assignment-V	1	27/03/24		TLM2	
55.	Content Beyond: AWS Academy Data Analytics	1	28/03/24		TLM2	
56.	AWS Academy Data Analytics	1	30/03/24		TLM2	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge :** Apply the knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex Engineering problems reaching substantiated conclusions using first principles of mathematics,natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and Design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 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 theinformation to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activitieswith an understanding of the limitations
PO 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 tothe professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering Solutions in societal and environmental contexts, and demonstrate the knowledge of, and need forsustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in Diverse teams, and in multidisciplinary settings.
PO 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.
PO 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 andleader in a team, to manage projects and in multidisciplinary environments.
PO 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr.Ch.Poorna Venkata Srinivasa Rao**	**Mr.K.Rajasekhar**	**Mrs.M.Hema Latha**	**Dr.B.Srinivasa Rao**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)
Accredited by NAAC & NBA (Under Tier - I), ISO 9001:2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT
PART-A

Name of Course Instructor : **Dr. K.VenuGopal**

Course Name & Code　　　 : **Server-Side Scripting Lab** , **20CS63**

L-T-P Structure　　　　　　 : **0-0-3**　　　　　　　　　　 **Credits:** 1.5
Program/Sem/Sec　　　　　 **:** B.Tech-IT / VI SEM / A/B
Academic Year　　　　　　 **:** 2023-24

PREREQUISITE　　　　　　 **:** JAVA Programming, Web Technology

Course Educational Objective:

　　　Students will learn the importance of client-server architecture in the web application development and able to develop dynamic data driven (server-side) web applications by using advanced technologies (AJAX, PHP)

Course Outcomes (CO): At the end of this course, the student will be able to:

CO1 : Understand the differences between server-side and client-side script, develop simple server-server-side web applications. **(Understand** - **L2)**

CO2 : Identify the importance of AJAX, PHP programming constructs to design server-side web applications. **(Remember** - **Ll)**

C03 : Develop Dynamic Data Driven (Server-side) Web Applications by using AJAX, PHP. **(Apply- L3)**

CO4 : Improve individual / teamwork skills, communication & report writing skills with ethical values.

COURSE ARTICULATION MATRIX (Correlation of Cos & POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	-	-	2	-	3	-	-	-	-	-	-	1	-	1	3
C02	-	-	2	-	3	-	-	-	-	-	-	1	-	3	-
C03	-	-	2	-	3	-	-	-	-	-	-	1	-	3	-
C04	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

*Note:　　　Enter Correlation Levels 1 or 2 or 3.
If there is no correlation, put '-' 1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

PART-B
COURSE DELIVERY PLAN (LESSON PLAN): Section-A&B

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1	MOD--1a Intro to Web Servers & Server Side Scripting	3	13-12-2023			TLM4	CO1	
2	MOD--1b:Front End Form Valid Java Script	3	20-12-2023			TLM4	CO1	
3	MOD--2 :Ajax XMLHTTP Request	3	27-12-2023			TLM4	CO1	
4	MOD--3: Ajax -Server Communication	3	03-01-2024			TLM4	CO1	
5	MOD--4 : PHP Form handling ,require and include methods	3	10-01-2024			TLM4	CO1	
6	MOD--5 : PHP Session Management	3	24-01-2024			TLM4	CO1	
7	MOD--6: PHP File Handling	3	27-01-2024			TLM4	CO2	
8	MOD--7 : PHP mail, PHP-Ajax	3	14-02-2024			TLM4	CO2	
9	MOD--8: PHP MYSQL- CRUD-I	3	28-02-2024			TLM4	CO3	
10	MOD--9: PHP MYSQL- CRUD -II	3	06-03-2024			TLM4	CO3	
11	MOD--10: PHP Image handling- PHP -JSON	3	13-03-2024			TLM4	CO3	
11	**Programs Beyond Syllabus, Revision, Pending Etc**	3	20-03-2024			TLM4	CO3	
12	**Lab Internal Examination**	3	27-03-2024					

Teaching Learning Methods			
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TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Day-to-Day Work	A1 = 5
Record & Observation	B1 = 5
Internal Exam	C1 = 5
Cumulative Internal Examination (CIE): (A1+B1+C1)	15
Semester End Examination (SEE)	35
Total Marks = CIE + SEE	50

PART-D

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	Course Instructor	**Course Coordinator**	**MOD-Coordinator**	**Head of the Department**
Signature				
Name of the Faculty	Dr. K.VenuGopal	Dr. K Venu Gopal	Dr.S.Naganjaneyulu	Dr. B.Srinivasa Rao