LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with Grade 'A' & 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.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. A. GOPI SURESH

Course Name & Code : **INFORMATION SECURITY (20CS17)**

L-T-P Structure : 3-0-0 Credits : 3

Program/Sem/Sec : B.Tech., CSE, VI-Sem., Section – A A. Y : 2022 - 2023

PRE-REQUISITE : Computer Networks, Number theory and programming language

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The Objective of the course is to 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 this course, the student will be able to

CO1	Summarize encryption algorithms to achieve data confidentiality. **(Understand-L2)**
CO2	Apply Secure hash functions for attaining data integrity. **(Apply-L3)**
CO3	Illustrate the email security mechanisms to achieve authentication. **(Understand- L2)**
CO4	Demonstrate the techniques of web security. **(Understand-L2)**
CO5	Examine the threats and remedial measures for system security. **(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	2	3	2	-	-	1	-	-	-	-	-	1	1	-	-
CO2	2	3	2	-	-	1	-	-	-	-	-	1	1	-	-
CO3	2	3	2	-	-	2	-	-	-	-	-	1	1	-	-
CO4	2	1	2	-	-	2	-	-	-	-	-	1	1	-	-
CO5	2	2	1	-	-	1	-	-	-	-	-	1	1	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

1- Low **2 –**Medium **3** High

TEXTBOOKS:

T1 William Stallings, "Network Security Essentials (Applications and Standards)", Pearson
T2 Education, 1999.
William Stallings, "Cryptography and Network Security", PHI/Pearson, fourth edition, 2000.

REFERENCE BOOKS:

R1 Whitman, "Principles of Information Security", Thomson, PHI, 2000.
R2 Robert Bragg, Mark Rhodes, Network Security: The complete reference, TMH
R3 Buchmann, Introduction to Cryptography, Springer,2010.
R4 Jeetendra pande, Ajay, "Digital Foresnsics', ISBN: 978-93-84813-94-9.

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 to IS,	1	27/12/2022			
2.	Security Attacks	1	28/12/2022			
3.	Security Services, Mechanisms	1	30/12/2022			
4.	Integrity, Authentication Confidentiality & &Non-Repudiation	1	31/12/2022			
5.	Substitution Techniques,	1	03/01/2023			
6.	Transposition Techniques	1	04/01/2023			
7.	Block Cipher, Block Cipher	1	06/01/2023			
8.	Fiestal Structure		07/01/2023			
9.	DES, Triple DES Algorithm	1	10/01/2023			
10.	AES Algorithm	1	11/01/2023			
11.	Cipher Block Modes of Operations	1	13/01/2023			
12.	Placement of encryption	1	18/01/2023			
13.	Traffic Analysis	1	20/01/2023			
14.	Key Distribution	1	21/01/2023			
15.	Assignment-1	1	24/01/2023			
No. of classes required to complete UNIT-I		15				

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
16.	Approaches of Message Authentication,	1	25/01/2023			
17.	Hash & MAC functions	1	27/01/2023			
18.	HMAC Algorithm	1	28/01/2023			
19.	Public-Key Encryption Algorithm- RSA	1	31/01/2023			
20.	Diffie –Hellman Key Exchange Algorithm	1	01/02/2023			
21.	SHA-512	1	03/02/2023			
22.	Digital Signatures	1	04/02/2023			
23.	Public Key Infrastructure, Digital Certificates	1	07/02/2023			
24.	Certificate Authority, Key Management	1	08/02/2023			
25.	Kerberos, X.509 Directory Authentication Service	1	10/02/2023			
26.	Assignment-2	1	11/02/2023			
sNo. of classes required to complete UNIT-II		11		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
27.	Email privacy, Pretty Good Privacy (PGP)	1	14/02/2023			
28.	PGP Key Management	1	17/02/2023			
29.	MIME and S/ MIME	1	18/02/2023			
30.	Mid Exam-1		20/2/2023 to 25/02/2023			
31.	IP Security Overview, IP Security Architecture,	1	28/02/2023			
32.	Authentication Header Encapsulating Security Payload,	1	01/03/2023			
33.	Tunnel and Transport Modes	1	04/03/2023			
34.	Combining Security Associations, Key Exchange	1	07/03/2023			
35.	Cryptographic Suites	1	08/03/2023			
36.	Unit Overview and Discussion	1	10/03/2023			

37.	Assignment - 3	1	11/03/2023			
No. of classes required to complete UNIT-III		10		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
38.	Web Security Requirements	1	14/03/2023			
39.	Secure Socket Layer (SSL)Architecture,	1	15/03/2023			
40.	SSL Handshake Protocol	1	17/03/2023			
41.	Transport Layer Security	1	18/03/2023			
42.	Secure Electronic Transaction (SET)	1	21/03/2023			
43.	Payment Processing	1	22/03/2023			
44.	HTTPs. HTTP vs HTTPs	1	24/03/2023			
45.	Unit Overview and Discussion	1	25/03/2023			
No. of classes required to complete UNIT-IV		08		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
46.	Intruder Behaviour Patterns	1	28/03/2023			
47.	Intrusion Techniques	1	29/03/2023			
48.	Honeypot	1	31/03/2023			
49.	Malicious Software	1	01/04/2023			
50.	Viruses and Related Threats	1	04/04/2023			
51.	DDOoS	1	05/04/2023			
52.	Firewall Design principles	1	07/04/2023			
53.	Trust Management System	1	08/04/2023			
54.	Introduction to Digital forensics	1	11/04/2023			
55.	Assignment-5	1	12/04/2023			
56.	Unit -1 Overview and Discussion	1	14/04/2023			
57.	Unit -2 Overview and Discussion		15/04/2023			

58.	Unit -3 Overview and Discussion		17/04/2023			
59.	Unit -4 Overview and Discussion		18/04/2023			
60.	Unit -5 Overview and Discussion		21/04/2023			
61.	Unit 1,2,3,4&5 Overview and Discussion		22/04/2023			
62.	Mid Exam-2		24/04/2023 To 29/04/2023			
No. of classes required to complete UNIT-V		16		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– 1 (Units I,II&III(Half of the Syllabus))	**A1=5**
I-Descriptive Examination (Units I, II&III (Half of the Syllabus))	**M1=15**
I-Quiz Examination (Units I, II&III (Half of the Syllabus))	**Q1=10**
Assignment– 2 (Units III (remaining Half of the Syllabus),IV&V))	**A2=5**
II- Descriptive Examination (Units III (remaining Half of the Syllabus), IV&V))	**M2=15**
II-Quiz Examination (Units III (remaining Half of the Syllabus), IV&V))	**Q2=10**
Mid Marks=80% of Max((M1+A1+Q1),(M2+A2+Q2))+ 20% of Min((M1+A1+Q1),(M2+A2+Q2))	**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 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, demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: 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, 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	**Programming Paradigms:** The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization
PSO 2	**Data Engineering:** The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	**Software Engineering:** To inculcate an ability to analyze, design and implement database applications

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	A.Gopi Suresh	Dr. B. Manaswini	Dr.D.V. Subbaiah	Dr. D. Veeraiah
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech. VI-Sem., CSE

ACADEMIC YEAR : 2022-23

COURSE NAME & CODE : **INFORMATION SECURITY LAB & 20CS61**

L-T-P STRUCTURE : 0-0-3 **COURSE CREDITS** : 1.5

COURSE INSTRUCTOR : **A. Gopi Suresh**

Pre-requisites: : Computer Programming, Mathematics, Computer Networks.

Course Educational Objectives (CEOs):

The Objective of the course is to provide practical level training that enables the usage of security algorithms for handling security projects. It also provides foundation level training for network analysis to find out the intruders in a network traffic.

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

CO 1 Demonstrate the security concepts, type of attacks and network security algorithms. (Understand - L2)

CO 2 Apply symmetric and asymmetric cryptography technique to encrypt and decrypt text. (Apply - L3

CO 3 Apply network-based tools for network analysis.(Apply - L3)

CO 4 Improve individual / teamwork skills, communication & report writing skills with ethical values.

1. Course Articulation Matrix:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-
CO3	3	-	-	-	3		-	-	-	-	-	-	-	1	-

CO4	-	-	-	-	-	-	-	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:

T1 William Stallings, "Network Security Essentials (Applications and Standards)", Pearson Education, 1999.

T2 Snort 2.1 Intrusion Detection by Jay Beale, Andrew R.Baker , Second Editio

REFERENCE BOOK(S):

1.William Stallings, "Cryptography and Network security", Pearson Education, Fourth Edition.Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language UserGuide", Pearson Education, 2nd Edition, ISBN: 0- 201-57168-4, 1998.

2. https://www.snort.org/documents/snort-3-1-0-0-on-ubuntu-18-202007.

3. https://www.wireshark.org/download/docs/user-guide.pdf

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	Teaching Learning Methods	HOD Sign Weekly
	Lab cycle-1	3 3	29/12/2022 05/01/2023		**DM5**	
	Lab cycle-2	3 3	12/01/2023 19/01/2023		**DM5**	
	Lab cycle-3	3 3	26/01/2023 02/02/2023		**DM5**	
	Lab cycle-4	3 3	09/02/2023 16/02/2023		**DM5**	
	Mid Exam-1		20/02/2023 To 25/02/2022		**DM5**	
	Lab cycle-5	3 3	02/03/2023 09/03/2023			
	Lab cycle-6	3 3	16/03/2023 23/03/2023		**DM5**	
	Lab cycle-7	3	30/03/2023		**DM5**	
	Lab cycle-8	3	06/04/2023			
	Lab cycle-9	3	13/04/2023			

	Lab Inter Examination	3	20/04/2023		**DM5**	

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

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 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	**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
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.

~~Title~~	~~Course Instructor~~	~~Course Coordinator~~	~~Module Coordinator~~	~~Head of the Department~~

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

Name of the Faculty	A.Gopi Suresh	Dr. B. Manaswini	Dr.D.V. Subbaiah	Dr. D. Veeraiah
Signature				

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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. T.N.V.S Praveen
Course Name & Code : Compiler Design, 20CS18
L-T-P Structure : **3-0-0** **Credits:** 03
Program/Sem/Sec : B.Tech-CSE / VI SEM / A
A.Y. : 2022-23

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	2	1	
CO2	3	2										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	26-12-2022		**TLM1**	CO1	
2.	Compiler Vs Interpreter	1	28-12-2022		**TLM1**	CO1	
3.	The Phases of Compiler	1	29-12-2022		**TLM1**	CO1	
4.	The Phases of Compiler	1	30-12-2022		**TLM1**	CO1	
5.	Compiler Construction Tools	1	02-01-2023		**TLM1**	CO1	
6.	Boot Strapping Concept	1	04-01-2023		**TLM2**	CO1	
7.	The Role of Lexical Analyzer	1	05-01-2023		**TLM2**	CO1	
8.	Input Buffering	1	06-01-2023		**TLM2**	CO1	
9.	Input Buffering	1	09-01-2023		**TLM2**	CO1	
10.	Specification of Tokens	1	11-01-2023		**TLM2**	CO1	
11.	Recognition of Tokens	1	12-01-2023		**TLM1**	CO1	
12.	LEX Tools	1	18-01-2023		**TLM1**	CO1	
13.	Examples on LEX Tool	1	19-01-2023		**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	20-01-2023		**TLM1**	CO2	
2.	Writing a Grammar	1	23-01-2023		**TLM1**	CO2	
3.	Elimination of left recursion	1	25-01-2023		**TLM2**	CO2	
4.	Left factoring	1	26-01-2023		**TLM1**	CO2	

5.	Recursive decent parsing	1	27-01-2023		**TLM1**	CO2	
6.	Predictive Parsing	1	30-01-2023		**TLM1**	CO2	
7.	Pre-processing steps required for predictive parsing	1	01-02-2023		**TLM2**	CO2	
8.	LL(1) Grammar	1	02-02-2023		**TLM1**	CO2	
9.	Examples on LL(1) Parser	1	03-02-2023		**TLM1**	CO2	
10.	Error recovery in predictive parsing temple	1	06-02-2023		**TLM1**	CO2	
11.	Backtracking	1	08-02-2023		**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	09-02-2023		**TLM1**	CO3	
2.	Shift reduce Parsing	1	10-02-2023		**TLM1**	CO3	
3.	Operator precedence Parsing	1	13-02-2023		**TLM1**	CO3	
4.	SLR parser	1	15-02-2023		**TLM1**	CO3	
5.	Examples on SLR parser	1	16-02-2023		**TLM2**	CO3	
6.	CLR parser	1	17-02-2023		**TLM1**	CO3	
7.	Examples on CLR parser	1	27-02-2023		**TLM1**	CO3	
8.	LALR parser	1	01-03-2023		**TLM1**	CO3	
9.	Examples on LALR Parser	1	02-03-2023		**TLM2**	CO3	
10.	Handling Ambiguous Grammar	1	03-03-2023		**TLM2**	CO3	
11.	Error recovery in LR parser	1	06-03-2023		**TLM2**	CO3	
12.	YACC-Automatic parser Generator	1	08-03-2023		**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	09-03-2023		**TLM1**	CO4	
2.	Evaluation order of SDD's	1	10-03-2023		**TLM1**	CO4	
3.	Application of SDD	1	13-03-2023		**TLM1**	CO4	
4.	Syntax directed Translation schemes	1	15-03-2023		**TLM1**	CO4	
5.	Syntax directed Translation schemes	1	16-03-2023		**TLM1**	CO4	
6.	Syntax Tree	1	17-03-2023		**TLM1**	CO4	
7.	Polish Notation	1	20-03-2023		**TLM1**	CO4	
8.	Three Address Code	1	22-03-2023		**TLM1**	CO4	
9.	Static single assignment	2	23-03-2023 To 24-03-2023		**TLM1**	CO4	
10.	Translation of expressions and control flow statements-Boolean expressions	2	29-03-2023 To 30-03-2023		**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	03-04-2023		**TLM1**	CO5	
2.	Principle Sources of optimization	2	05-04-2023 to 06-04-2023		**TLM1**	CO5	
3.	Loop Optimization	2	07-04-2023 10-04-2023		**TLM1**	CO5	
4.	Design issues & Object code forms	1	12-04-2023		**TLM1**	CO5	
5.	Optimization of Basic Blocks	1	13-04-2023		**TLM1**	CO5	
6.	DAG Representation of basic blocks	1	14-04-2023		**TLM1**	CO5	
7.	Code Generation using DAG	1	17-04-2023		**TLM1**	CO5	
8.	A simple Code Generator	1	19-04-2023		**TLM1**	CO5	
9.	Peephole Optimization	1	20-04-2023		**TLM1**	CO5	
10.	Register Allocation and assignment	1	21-04-2023		**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 engineer**ing 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	An ability to apply software engineering practices and strategies in software project development using open-source programming environment for the success of organization
PSO 2	An Ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mr. T.N.V.S.Praveen	Dr. D Veeraiah	Dr. D Veeraiah	Dr. D Veeraiah
Signature				

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: D.ANIL KUMAR
Course Name & Code **:** BIGDATA ANALYTICS & 20CS19
L-T-P Structure **: 3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/VI/A **A.Y.:** 2022-23

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	3	-	-
CO3	2	-	2	-	-	-	-	-	-	-	-	2	-	-	-
CO4	2	3	-	-	1	-	-	-	-	-	-	2	-	-	-
CO5	2	3	-	-	1	-	-	-	-	-	-	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,"IntelligentDataAnalysis", 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	26-12-2022		TLM1	
2.	Types of Digital Data	1	27-12-2022		TLM1	
3.	Classification of Digital Data	1	29-12-2022		TLM1	
4.	Characteristics of Data	1	30-12-2022		TLM1	
5.	Evolution of Big Data	1	02-01-2023		TLM1	
6.	Definition of Big Data, Challenges with Big Data	1	03-01-2023		TLM1	
7.	What is Big Data? Other Characteristics of Data Which are not Definitional Traits of Big Data	1	05-01-2023		TLM1	
8.	Why Big Data? analyzing Data with Unix tools	1	06-01-2023		TLM1	
9.	Analyzing Data with Hadoop	1	09-01-2023		TLM1	
10.	Hadoop Streaming	1	10-01-2023		TLM1	
11.	Hadoop Echo System	1	11-01-2023		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	12-01-2023		TLM1	
13.	HDFS Concepts	1	19-01-2023		TLM1	
14.	Command Line Interface	1	20-01-2023		TLM1	
15.	Hadoop file system interfaces	1	23-01-2023		TLM1	
16.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	24-01-2023		TLM1	
17.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	27-01-2023		TLM1	
18.	Hadoop I/O: Compression	1	30-01-2023		TLM1	
19.	Serialization	1	31-01-2023		TLM1	
20.	Avro and File-Based Data structures	1	02-02-2023		TLM1	
21.	Bigdata Applications	1	03-02-2023		TLM1	
22.	Bigdata Analytics Use cases	1	06-02-2023		TLM1	
23.	Bigdata Analytics Use cases	1	07-02-2023		TLM1	
24.	Bigdata Analytics Challenges	1	09-02-2023		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	10-02-2023		TLM1	
26.	Anatomy of a Map Reduce Job Run	1	13-02-2023		TLM1	
27.	Job Failures	1	14-02-2023		TLM1	
28.	Job Scheduling	1	16-02-2023		TLM1	
29.	Shuffle and Sort	1	16-02-2023		TLM1	
30.	Task Execution	1	27-02-2023		TLM1	

31.	Map Reduce Types and Formats	1	28-02-2023		TLM1	
32.	Map Reduce Features	1	01-03-2023		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	02-03-2023		TLM1	
34.	Running Hive	1	03-03-2023		TLM1	
35.	Hive QL	1	06-03-2023		TLM1	
36.	Tables, Querying Data	1	07-03-2023		TLM1	
37.	User Defined functions	1	09-03-2023		TLM1	
38.	Sqoop: Introduction	1	10-03-2023		TLM1	
39.	generate code	1	13-03-2023		TLM1	
40.	Database import	1	14-03-2023		TLM1	
41.	working with imported data	1	16-03-2023		TLM1	
42.	Importing large objects	1	17-03-2023		TLM1	
43.	performing an export	1	20-03-2023		TLM1	
44.	Applications	1	21-03-2023		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	27-03-2023		TLM1	
46.	Execution Modes of Pig	1	28-03-2023		TLM1	
47.	Comparison of Pig with Databases	1	30-03-2023		TLM2	
48.	Grunt, Pig Latin	1	31-03-2023		TLM2	
49.	User Defined Functions	1	03-04-2023		TLM2	
50.	Data Processing operators	1	04-04-2023		TLM2	
51.	HBase: Basics	1	06-04-2023		TLM2	
52.	Concepts, Clients	1	07-04-2023		TLM2	
53.	Example	1	10-04-2023		TLM2	
54.	HBase Versus RDBMS	1	11-04-2023		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	13-04-2023		TLM2	
2.	BDA Use case – II	1	14-04-2023		TLM2	
3.	BDA Use case - III	1	17-04-2023		TLM2	

4.		1	18-04-2023		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.
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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	**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	The ability to apply Software Engineering practices and strategies in software project. development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr. D. Anil kumar**	**Mr. G.V. Suresh**	**Dr. S. Jayaprada**	**Dr. D.Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: D,ANIL KUMAR
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.:** 2022-23

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	28-12-2023		
2.	Implementation of Run a basic Word Count Map Reduce program	3	04-01-2023		
3.	Implementation of Matrix Multiplication with Hadoop Map Reduce	3	11-01-2023		
4.	Implementation of Weather mining by taking weather dataset using Map Reduce	3	18-01-2023		
5.	Installation of Hive along with practice examples	3	25-01-2023		
6.	Installation of Sqoop along with Practice examples	3	01-02-2023		
7.	Downloading and installing Tableau Understanding about importing data, saving, opening, and sharing work books	3	08-02-2023		
8.	Data Preparation with Tableau	3	15-02-2023		
9.	Charts: Bar Charts, Legends, Filters ,and Hierarchies ,Step Charts, Line Charts	3	22-02-2023		
10.	Maps: Symbol Maps, Filled Maps, Density Maps, Maps with Pie Charts	3	01-03-2023		
11.	Interactive Dash boards	3	08-03-2023		
12.	Interactive Dash boards	3	15-03-2023		
13.	Interactive Dash boards	3	22-03-2023		
14.	Lab Internal Exam	3	29-03-2023		

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.
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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.
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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	The ability to apply Software Engineering practices and strategies in software project. development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr. D.Anil kumar**	**Mr. G V Suresh**	**Dr. S. Jayaprada**	**Dr. D.Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : P.VEERA SWAMY
Course Name & Code : Information Retrieval Systems &20CS21
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., VI-Sem., Sec-A A.Y: 2022-23

PRE-REQUISITE: Fundamentals of database concepts, data structures & data warehouse.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to present the basic concepts in information retrieval and the significance of various indexing and searching techniques for information retrieval.

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

CO 1	Identify the basic concepts of Information retrieval system.
CO 2	Evaluate the taxonomy of different information retrieval models.
CO 3	Demonstrate and evaluate automatic indexing, document & term clustering techniques.
CO 4	Demonstrate and evaluate various searching techniques.
CO5	Evaluate text processing techniques and operations in information retrieval system.

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

COs	PO1	PO2	PO3	PO 4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	1	-	-	-	-	-	-	-	-	-	-	1	-
CO2	3	2	2	-	-	-	-	-	-	-	-	-	-	1	-
CO3	3	2	2	-	-	-	-	-	-	-	-	-	-	3	-
CO4	3	2	2	-	-	-	-	-	-	-	-	-	-	2	-
CO5	3	2	2	-	-	-	-	-	-	-	-	-	-	3	-

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 Kowalski, Gerald, Mark T Maybury, —Information Storage & Retrieval Systems: Theory and Implementation‖, Kluwer Academic Press, 2nd edition, 2002.

REFERENCE BOOKS:

R1 Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992.

R2 https://epdf.tips/queue/information-storage-and-retrieval-systems-theory-and-implementationthe-informat.html Robert Korthagen, John Wiley & Sons, —Information Storage & Retrieval‖.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction & Information Retrieval System Capabilities

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.	UNIT - I: Introduction: Definition	1	27-12-2022		TLM2	
2.	Objectives	1	29-12-2022		TLM2	
3.	Functional Overview Item Normalization	1	30-12-2022		TLM2	
4.	Selective dissemination AFB	1	31-12-2022		TLM2	
5.	Relationship to DBMS	1	03-01-2023		TLM2	
6.	Digital libraries and Data Warehouses	1	05-01-2023		TLM2	
7.	Information Retrieval System Capabilities: Search capabilities	2	06-01-2023 07-01-2023		TLM2	
8.	Information Retrieval System Capabilities: Browse	1	10-01-2023		TLM2	
9.	Miscellaneous Capabilities	1	12-01-2023		TLM2	
No. of classes required to complete UNIT-I:10				No. of classes taken:		

UNIT-II: Data Structures & Cataloguing and Indexing

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, Stemming Algorithms	2	19-01-2023 20-01-2023		TLM2	
2.	Inverted file structures	1	21-01-2023		TLM2	
3.	N-gram data structure	1	24-01-2023		TLM2	
4.	PAT data structure	1	27-01-2023		TLM2	
5.	Signature file structure	1	28-01-2023		TLM2	
6.	Hypertext data structure	1	31-01-2023		TLM2	
7.	Cataloguing and Indexing :Objectives	1	02-02-2023		TLM2	
8.	Indexing Process	1	03-02-2023		TLM2	
9.	Automatic Indexing,	1	04-02-2023		TLM2	
10.	Information Extraction	1	07-02-2023		TLM2	
No. of classes required to complete UNIT-II:11				No. of classes taken:		

UNIT-III: Automatic Indexing, Document and Term Clustering

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.	Automatic Indexing: Classes of automatic indexing	2	09-02-2023 10-02-2023		TLM2	
2.	Statistical indexing	1	14-02-2023		TLM2	
3.	Natural language	1	16-02-2023		TLM2	
4.	Concept indexing, Hypertext linkages.	1	17-02-2023		TLM2	
I MID EXAMINATIONS FROM 20-02-2023 TO 25-02-2023						

5.	Document and Term Clustering: Introduction	1	28-02-2023		TLM2	
6.	Thesaurus generation	1	02-03-2023		TLM2	
7.	Item clustering	2	03-03-2023 04-03-2023		TLM2	
8.	Hierarchy of clusters	1	07-03-2023		TLM2	
No. of classes required to complete UNIT-III:10				No. of classes taken:		

UNIT-IV :User Search Techniques & Information Visualization

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.	Search statements and binding	1	09-03-2023		TLM2	
2.	Similarity measures and ranking	2	10-03-2023 14-03-2023		TLM2	
3.	Relevance feedback	1	16-03-2023		TLM2	
4.	Selective dissemination of information search	2	17-03-2023 21-03-2023		TLM2	
5.	Weighted searches of Boolean systems	1	23-03-2023		TLM2	
6.	Searching the Internet and hypertext	1	24-03-2023		TLM2	
7.	Information Visualization	1	25-03-2023		TLM2	
8.	Introduction: Cognition and perception	1	28-03-2023		TLM2	
9.	Information visualization technologies	2	31-03-2023 01-04-2023		TLM2	
No. of classes required to complete UNIT-IV:12				No. of classes taken:		

UNIT-V:Text Search Algorithms & Information System Evaluation

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.	Text Search Algorithms	2	04-04-2023 06-04-2023		TLM2	

	Introduction, Software text search algorithms					
2.	Hardware text search systems.	2	08-04-2023 11-04-2023		TLM2	
3.	Information System Evaluation: Introduction	1	13-04-2023		TLM2	
4.	Measures used in system evaluation,	1	15-04-2023		TLM2	
5.	Measurement example – TREC results	2	18-04-2023 20-04-2023		TLM2	
6.	Revision	1	21-04-2023		TLM2	
No. of classes required to complete UNIT-V:09				No. of classes taken:		
II MID EXAMINATIONS 24-04-2023 TO 29-04-2023						

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 Regulations):

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	**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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Mr P.Veera Swamy	**Ms A.Praneetha**	**Dr.K.Naga Prasanthi**	**Dr.D.Veeraiah**

DEPARTMENT OF MECHANICAL ENGINEERING
COURSE HANDOUT

Part-A

PROGRAM : B.Tech., VI-Sem., CSE.,A-SECTION

ACADEMIC YEAR : 2022-23

COURSE NAME & CODE : RENEWABLE ENERGY SOURCES- 20ME81

L-T-P STRUCTURE : 4-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : KAMALA PRIYA B

COURSE COORDINATOR : Dr V Dhana Raju

PRE-REQUISITES: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): To provide the insights on different non-conventional energy sources, potential, salient features and utilization of solar, wind, geothermal, ocean thermal energy, bio energy and direct energy conversion systems.

COURSE OUTCOMES (COs)

After completion of the course, the student will be able to

CO1: Compute the performance of solar energy harnessing devices and its energy scenario. **(Applying– L3)**

CO2: Apply the principles of energy conversion for wind and geothermal power generating plants. **(Applying - L3)**

CO3: Compare the power generating capacities of tidal energy, wave energy and ocean thermal energy plants. **(Understanding - L2)**

CO4: Illustrate the various biomass power generation system technologies. **(Understanding - L2)**

CO5: Comprehend the direct energy power generation systems. **(Understanding - 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	-	-	-	3	3	-	-	-	-	2	2	-	-
CO2	2	1	-	-	-	3	3	-	-	-	-	2	2	-	-
CO3	1	1	-	-	-	3	3	-	-	-	-	2	2	-	-
CO4	1	1	-	-	-	3	3	-	-	-	-	2	2	-	-
CO5	1	1	-	-	-	3	3	-	-	-	-	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).

BOS APPROVED TEXT BOOKS:

T1 G.D.Rai, Non-Conventional Energy Sources, 5th Edition 2011, Khanna Publishers, New Delhi, India.

T2 Kreith, F and Kreider, J. F., Principles of Solar Engineering, McGraw-Hill, 1978.

BOS APPROVED REFERENCE BOOKS:

R1 John Twidell&Tony Weir, Renewable Energy Resources – 2nd Edition, Taylor & Francis

R2 G.N.Tiwari, Solar Energy – Fundamentals, Design, Modelling and Applications –Narosa Publication Ltd.,2000.

R3 Ashok V Desai, Non-Conventional Energy- Wiley Eastern, 2000.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I : GLOBAL AND NATIONAL ENERGY SCENARIO & SOLAR ENERGY HARNESSING DEVICES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Course Outcomes & Blooms Taxonomy Levels	1	27.12.2022		**TLM1/ TLM2**	CO1	T1	
2.	Over view of conventional & renewable energy sources	1	28.12.2022		**TLM1/ TLM2**	CO1	T1	
3.	Need & Development of renewable energy sources	1	29.12.2022		**TLM1/ TLM2**	CO1	T1	
4.	Types of renewable energy systems.	1	31.12.2022		**TLM1/ TLM2**	CO1	T1	
5.	Energy available from Sun	1	03.01.2023		**TLM1/ TLM2**	CO1	T1	
6.	Solar radiation data,	1	04.01.2023		**TLM1/ TLM2**	CO1	T1	
7.	Flat plate and Concentrating collectors	1	05.01.2023		**TLM1/ TLM2**	CO1	T1	
8.	Mathematical analysis of Flat plate collectors	1	07.01.2023		**TLM1/ TLM2**	CO1	T1	
9.	collector efficiency	1	10.01.2023		**TLM1/ TLM2**	CO1	T1	
10.	Solar water Heating, Space Heating	1	11.01.2023		**TLM1/ TLM2**	CO1	T1	
11.	Active and Passive heating	1	12.01.2023		**TLM1/ TLM2**	CO1	T1	
12.	solar stills and ponds	1	18.01.2023		**TLM1/ TLM2**	CO1	T1	
13.	basic principle of power generation in photovoltaic cell	1	19.01.2023		**TLM1/ TLM2**	CO1	T1	
14.	Problems	1	21.01.2023		**TLM1/ TLM2**	CO1	T1	
15.	**Quiz/Assignment**							
No. of classes required		14			No. of classes taken:			

to complete UNIT-I		

UNIT-II : WIND ENERGY & GEOTHERMAL ENERGY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
16.	Wind – characteristics – wind energy conversion systems	1	24.01.2023		**TLM1/ TLM2**	CO2	T1	
17.	Types of wind energy	1	25.01.2023		**TLM1/ TLM2**	CO2		
18.	Betz model & Interference factor	1	28.01.2023		**TLM1/ TLM2**	CO2	T1	
19.	Power Coefficient Torque Coefficient and thrust coefficient	1	31.01.2023		**TLM1/ TLM2**	CO2	T1	
20.	site selection requirements.	1	01.02.2023		**TLM1/ TLM2**	CO2	T1	
21.	GEOTHERMAL ENERGY: Structure of Earth, Geothermal sources	1	02.02.2023		**TLM1/ TLM2**	CO2	T1	
22.	Hot springs, Hot Rocks& Hot Aquifers	1	04.02.2023		**TLM1/ TLM2**	CO2	T1	
23.	Interconnection of geothermal fossil systems	1	07.02.2023		**TLM1/ TLM2**	CO2	T1	
24.	Problems	1	08.02.2023		**TLM1/ TLM2**	CO1	T1	
25.	**Quiz/Assignment**							
No. of classes required to complete UNIT-II		9			No. of classes taken:			

UNIT-III : TIDAL ENERGY, WAVE ENERGY and OCEAN THERMAL ENERGY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
26.	**Tidal Energy**- Introduction, Origin of Tides	1	09.02.2023		**TLM1/ TLM2**	CO3	T1, R8	
27.	Tidal Power generation	1	11.02.2023		**TLM1/ TLM2**	CO3	T1	
28.	Classification of Tidal Power Plant,	1	14.02.2023		**TLM1/ TLM2**	CO3	T1	

29.	Site requirements	1	15.02.2023		**TLM1/ TLM2**	CO3	T1	
30.	**WAVE ENERGY**: Introduction, Wave energy and Power	1	16.02.2023		**TLM1/ TLM2**	CO3	T1	
31.	Wave Energy devices – Merits and Demerits	1	28.02.2023		**TLM1/ TLM2**	CO3	T1	
32.	**OCEAN THERMAL ENERGY**: Introduction	1	01.03.2023		**TLM1/ TLM2**	CO3	T1	
33.	Working principle of Ocean Thermal Energy Conversion	1	02.03.2023		**TLM1/ TLM2**	CO3	T1	
34.	OTEC Systems,	1	04.03.2023		**TLM1/ TLM2**	CO3	T1	
35.	Advantages and Disadvantages of OTEC plants.	1	07.03.2023		**TLM1/ TLM2**	CO3	T1	
36.	**Quiz/Assignment**					CO3		
No. of classes required to complete UNIT-III		10			No. of classes taken:			

UNIT-IV : BIO – ENERGY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
37.	**BIO – ENERGY**: Introduction	1	09.03.2023		**TLM1/ TLM2**	CO4	T1	
38.	Biomass Energy Sources	1	11.03.2023		**TLM1/ TLM2**	CO4	T1	
39.	Aerobic and Anaerobic bio-conversion processes	1	14.03.2023		**TLM1/ TLM2**	CO4	T1	
40.	Types of Biogas plants	3	15.03.2023 16.03.2023 18.03.2023		**TLM1/ TLM2**	CO4	T1	
41.	Raw Materials and properties of Bio-gas	1	21.03.2023		**TLM1/ TLM2**	CO4	T1	
42.	Bio-gas plant Technology and Status	1	23.03.2023		**TLM1/ TLM2**	CO4	T1	
43.	Biomass gasification	2	25.03.2023 28.03.2023		**TLM1/ TLM2**	CO4	T1	
44.	Types and application of gasifier	1	29.03.2023		**TLM1/ TLM2**	CO4	T1	

45.	**Quiz/Assignment**					CO4		
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V : DIRECT ENERGY CONVERSION SYSTEMS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
46.	DIRECT ENERGY CONVERSION SYSTEMS: Introduction	2	01.04.2023 04.04.2023		**TLM1/ TLM2**	CO5	T1	
47.	Peltier effect, seebeck effect, Thomson effect,	1	06.04.2023		**TLM1/ TLM2**	CO5	T1	
48.	Fuel Cells-Types.	2	08.04.2023 11.04.2023		**TLM1/ TLM2**	CO5	T1	
49.	Efficiency of Fuel Cells.	1	12.04.2023		**TLM1/ TLM2**	CO5	T1	
50.	Thermoelectric power Generation	1	13.04.2023		**TLM1/ TLM2**	CO5	T1	
51.	Thermionic electro power Generation	1	15.04.2023		**TLM1/ TLM2**	CO5	T1	
52.	MHD Generator	1	18.04.2023		**TLM1/ TLM2**	CO5	T1	
53.	Open and closed systems	1	19.04.2023		**TLM1/ TLM2**	CO5	T1	
54.	applications of direct energy energy conversion systems	1	20.04.2023		**TLM1/ TLM2**	CO5	T1	
55.	**Quiz/Assignment**					CO5		
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

Academic Calender-A.Y-2020-21

Description	From	To	Weeks
B Tech V Semester			
Commencement of class work	26.12.2022		
I phase of Instructions	26.12.2022	18.02.2023	8
I Mid Examination	**20.02.2023**	**25.02.2023**	**1**

II phase of Instructions	27.02.2023	22.04.2023	8
II Mid Examination	**24.04.2023**	**29.04.2023**	**1**
Preparation and Practical	01.05.2023	06.05.2023	1
Semester End Examination	**08.05.2023**	**20.05.2023**	**2**
Internship	**22.05.2023**	**01.07.2023**	**6**

Part - C

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Assignment 1	1	A1=5
Assignment 2	2	A2=5
I-Mid Examination	1,2,3	B1=15
Quiz – 1	1,2,3	Q1=10
Assignment 3	3	A3=5
Assignment 4	4	A4=5
Assignment 5	5	A5=5
II-Mid Examination	3,4,5	B2=15
Quiz – 2	3,4,5	Q2=10
Evaluation of Assignment: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=15
Evaluation of Quiz Marks: Q=75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	1,2,3,4,5	Q=10
Cumulative Internal Examination: A+B+Q	**1,2,3,4,5**	**CIE=30**
Semester End Examinations	**1,2,3,4,5**	**SEE=70**
Total Marks: CIE+SEE	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: To build a professional career and pursue higher studies with sound knowledge in Mathematics, Science and Mechanical Engineering.

PEO2: To inculcate strong ethical values and leadership qualities for graduates to become successful in multidisciplinary activities.

PEO3: To develop inquisitiveness towards good communication and lifelong learning.

PROGRAMME OUTCOMES (POs)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

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.

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.
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.
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.
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.
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.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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.
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.
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.

PSOs

1. To apply the principles of thermal sciences to design and develop various thermal systems.
2. To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.
3. To apply the basic principles of mechanical engineering design or evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Kamala Priya B	Dr V Dhana Raju	Dr. P. Vijay Kumar	Dr. S. Pichi Reddy

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.

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

Name of Course Instructor : **Dr. Sujith Kumar Rath & Dr Pawel Veliventi**
Course Name & Code : **Soft skills & Soft Skills Laboratory (20HSS1)**
L-T-P Structure : **0-0-1+2** **Credit : 2**
Program/Sem/Sec : **B.Tech.CSE-A , VI-Sem.,** **A.Y: 2022-23**

Course Description & Objectives:

The Soft Skills Laboratory course equips students with required behavioural, 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	**Infer** the self awareness and personality **(Understand – L2)**
CO2	Work effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality.**(Apply – L3)**
CO3	Communicate through verbal/oral communication and improve the listening skills**(Apply – L3)**
CO4	**Relate** the critical & lateral thinking while dealing with personal/social/professional issues. **(Apply – L3)**

Course Content:

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)

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

ProfessionalSkills:

Career Planning- job vs. career- goal setting- SWOT analysis-Timemanagement – 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.

REFERENCEBOOKS:

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

CSE-A

S.No.	No. of Lecture Hours	Date	Planned Topics	Actual Date	HOD Sign Weekly
1	1	28-12-22	Role of language in personality		
2	2	26-12-22	Extempore		
3	1	04-01-23	How language reflects, impacts Personality		
4	2	02-01-23	Story Telling		
5	1	18-01-23	Using gender-neutral language in MNCs		
6	2	9-01-23	Case Studies		
7	1	25-01-23	Being culturally-sensitive-Personality Traits- Grooming & Dress code		
8	2	23-01-23	Using authentic materials: News papers, pamphlets and news clippings		
9	1	01-02-23	Career Planning		
10	2	30-01-23	Public Speaking		
11	1	08-02-23	Job vs. career- goal setting		
12	2	06-02-23	Critical Appreciation and Textual Analysis		
13	1	15-02-23	SWOT analysis		
14	2	13-02-23	Writing a review on a given short story/videos/book		
15	1	01-03-23	Time management		
16	2	6-03-23	Empathetic speaking		
17	1	15-03-23	Self-management		
18	2	13-03-23	Telephonic conversation		
19	1	22-03-23	Stress-management		
20	2	20-03-23	Situation based dialogues		
21	1	29-03-23	Effective Resume-Writing and presentation		
22	2	27-03-23	Listening to dialogues and analyzing		
23	1	5-04-23	Interview Skills		
24	2	10-04-23	Mock Interviews		
25	2	12-04-23	Interview Skills		
26	2	17-04-23	Mock Interviews		

Signature of Faculty

Signature of HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM	**: B.TECH-CSE**-VI-Sem-A Sec
ACADEMIC YEAR	**:** 2022-23
COURSE NAME & CODE	**: SERVER SIDE SCRIPTING LAB & 20CS63**
L-T-P STRUCTURE	**:** 0-0-3
COURSE CREDITS	**:** 1.5
COURSE INSTRUCTOR	**: Mr.P.Nagababu**
COURSE COORDINATOR	**: Dr.Y.Vijaya Bhaskar Reddy**

PREREQUISITE: JAVA Programming & Web Technologies

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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 (COs): At the end of the course, 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 - L1)**
CO3	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 between COs, POs & PSOs):

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

REFERENCE BOOKS:

R1	Steven Holzner, "PHP: The Complete Reference", McGraw-Hill Education, 2007.
R2	Kevin Tatroe, Peter MacIntyre, RasmusLerdorf, "Programming in PHP", O'Reilly, 3rd Edition, 2013.
R3	Luke Welling, Laura Thomson, "PHP and MySQL Web Development",Pearson Education, 5th Edition, 2011
R4	Lynn Beighley, Michael Morrison, "Head First PHP & MySQL: A Brain-Friendly Guide", O'Reilly, 1st Edition, 2007

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	Teaching Learning Methods	HOD Sign Weekly
1.	MODULE-1	3	27-12-2022& 03-01-2023		**DM5**	
2.	MODULE-2	3	10-01-2023& 24-01-2023		**DM5**	
3.	MODULE-3	3	31-01-2023& 07-02-2023		**DM5**	
4.	MODULE-4	3	14-02-2023		**DM5**	
5.	MODULE-5	3	21-02-2023& 28-02-2023		**DM5**	
6.	MODULE-6	3	07-03-2023		**DM5**	
7.	MODULE-7	3	14-03-2023		**DM5**	
8.	MODULE-8	3	21-03-2023& 28-03-2023		**DM5**	
9.	MODULE-9	3	04-04-2023		**DM5**	
10.	MODULE-10	3	11-04-2023		**DM5**	
11.	INTERNAL EXAM	3	18-04-2023			

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

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 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	**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
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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	(Mr.P.Nagababu)	(Dr.Y.Vijaya Bhaskar Reddy)	(Dr.K.Naga Prasanthi)	(Dr. D. Veeraiah)
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: G.V.Suresh

Course Name & Code **:** BIGDATA ANALYTICS & 20CS19

L-T-P Structure **: 3-0-0** **Credits:** 3

Program/Sem/Sec : B.Tech/VI/B **A.Y.:** 2022-23

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	3	-	-
CO3	2	-	2	-	-	-	-	-	-	-	-	2	-	-	-
CO4	2	3	-	-	1	-	-	-	-	-	-	2	-	-	-
CO5	2	3	-	-	1	-	-	-	-	-	-	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	26-12-2022		TLM1	
2.	Types of Digital Data	1	27-12-2022		TLM1	
3.	Classification of Digital Data	1	28-12-2022		TLM1	
4.	Characteristics of Data	1	29-12-2022		TLM1	
5.	Evolution of Big Data	1	02-01-2023		TLM1	
6.	Definition of Big Data, Challenges with Big Data	1	03-01-2023		TLM1	
7.	What is Big Data? Other Characteristics of Data Which are not Definitional Traits of Big Data	1	04-01-2023		TLM1	
8.	Why Big Data? analyzing Data with Unix tools	1	05-01-2023		TLM1	
9.	Analyzing Data with Hadoop	1	09-01-2023		TLM1	
10.	Hadoop Streaming	1	10-01-2023		TLM1	
11.	Hadoop Echo System	1	11-01-2023		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	12-01-2023		TLM1	
13.	HDFS Concepts	1	18-01-2023		TLM1	
14.	Command Line Interface	1	19-01-2023		TLM1	
15.	Hadoop file system interfaces	1	23-01-2023		TLM1	
16.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	24-01-2023		TLM1	
17.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	25-01-2023		TLM1	
18.	Hadoop I/O: Compression	1	30-01-2023		TLM1	
19.	Serialization	1	31-01-2023		TLM1	
20.	Avro and File-Based Data structures	1	01-02-2023		TLM1	
21.	Bigdata Applications	1	02-02-2023		TLM1	
22.	Bigdata Analytics Use cases	1	06-02-2023		TLM1	
23.	Bigdata Analytics Use cases	1	07-02-2023		TLM1	
24.	Bigdata Analytics Challenges	1	08-02-2023		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	09-02-2023		TLM1	
26.	Anatomy of a Map Reduce Job Run	1	13-02-2023		TLM1	
27.	Job Failures	1	14-02-2023		TLM1	
28.	Job Scheduling	1	15-02-2023		TLM1	

29.	Shuffle and Sort	1	16-02-2023		TLM1	
30.	Task Execution	1	27-02-2023		TLM1	
31.	Map Reduce Types and Formats	1	28-02-2023		TLM1	
32.	Map Reduce Features	1	01-03-2023		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	02-03-2023		TLM1	
34.	Running Hive	1	06-03-2023		TLM1	
35.	Hive QL	1	07-03-2023		TLM1	
36.	Tables, Querying Data	1	08-03-2023		TLM1	
37.	User Defined functions	1	09-03-2023		TLM1	
38.	Sqoop: Introduction	1	13-03-2023		TLM1	
39.	generate code	1	14-03-2023		TLM1	
40.	Database import	1	15-03-2023		TLM1	
41.	working with imported data	1	16-03-2023		TLM1	
42.	Importing large objects	1	20-03-2023		TLM1	
43.	performing an export	1	21-03-2023		TLM1	
44.	Applications	1	23-03-2023		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	27-03-2023		TLM1	
46.	Execution Modes of Pig	1	28-03-2023		TLM1	
47.	Comparison of Pig with Databases	1	29-03-2023		TLM2	
48.	Grunt, Pig Latin	1	03-04-2023		TLM2	
49.	User Defined Functions	1	04-04-2023		TLM2	
50.	Data Processing operators	1	06-04-2023		TLM2	
51.	HBase: Basics	1	10-04-2023		TLM2	
52.	Concepts, Clients	1	11-04-2023		TLM2	
53.	Example	1	12-04-2023		TLM2	
54.	HBase Versus RDBMS	1	13-04-2023		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	17-04-2023		TLM2	
2.	BDA Use case – II	1	18-04-2023		TLM2	

3.	BDA Use case - III	1	19-04-2023		TLM2	
4.		1	20-04-2023		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	The ability to apply Software Engineering practices and strategies in software project. development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr. G.V. Suresh**	**Mr. G.V. Suresh**	**Dr. S. Jayaprada**	**Dr. D. Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: G V Suresh

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.:** 2022-23

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	30-12-2023		
2.	Implementation of Run a basic Word Count Map Reduce program	3	06-01-2023		
3.	Implementation of Matrix Multiplication with Hadoop Map Reduce	3	13-01-2023		
4.	Implementation of Weather mining by taking weather dataset using Map Reduce	3	20-01-2023		
5.	Installation of Hive along with practice examples	3	27-01-2023		
6.	Installation of Sqoop along with Practice examples	3	03-02-2023		
7.	Downloading and installing Tableau Understanding about importing data, saving, opening, and sharing work books	3	10-02-2023		
8.	Data Preparation with Tableau	3	17-02-2023		
9.	Charts: Bar Charts, Legends, Filters ,and Hierarchies ,Step Charts, Line Charts	3	24-02-2023		
10.	Maps: Symbol Maps, Filled Maps, Density Maps, Maps with Pie Charts	3	03-03-2023		
11.	Interactive Dash boards	3	10-03-2023		
12.	Interactive Dash boards	3	17-03-2023		
13.	Interactive Dash boards	3	24-03-2023		
14.	Lab Internal Exam	3	31-03-2023		

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.
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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	The ability to apply Software Engineering practices and strategies in software project. development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr. G.V. Suresh**	**Mr. G.V. Suresh**	**Dr. S. Jayaprada**	**Dr. D. Veeraiah**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. D. Veeriah
Course Name & Code : Compiler Design, 20CS18
L-T-P Structure : **3-0-0** **Credits:** 03
Program/Sem/Sec : B.Tech-CSE / VI SEM / B
A.Y. : 2022-23

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	2	1	
CO2	3	2										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	26-12-2022		**TLM1**	CO1	
2.	Compiler Vs Interpreter	1	27-12-2022		**TLM1**	CO1	
3.	The Phases of Compiler	1	29-12-2022		**TLM1**	CO1	
4.	The Phases of Compiler	1	30-12-2022		**TLM1**	CO1	
5.	Compiler Construction Tools	1	02-01-2023		**TLM1**	CO1	
6.	Boot Strapping Concept	1	03-01-2023		**TLM2**	CO1	
7.	The Role of Lexical Analyzer	1	05-01-2023		**TLM2**	CO1	
8.	Input Buffering	1	06-01-2023		**TLM2**	CO1	
9.	Input Buffering	1	09-01-2023		**TLM2**	CO1	
10.	Specification of Tokens	1	10-01-2023		**TLM2**	CO1	
11.	Recognition of Tokens	1	12-01-2023		**TLM1**	CO1	
12.	LEX Tools	1	18-01-2023		**TLM1**	CO1	
13.	Examples on LEX Tool	1	19-01-2023		**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	20-01-2023		**TLM1**	CO2	
2.	Writing a Grammar	1	23-01-2023		**TLM1**	CO2	
3.	Elimination of left recursion	1	24-01-2023		**TLM2**	CO2	
4.	Left factoring	1	26-01-2023		**TLM1**	CO2	

5.	Recursive decent parsing	1	27-01-2023		**TLM1**	CO2	
6.	Predictive Parsing	1	30-01-2023		**TLM1**	CO2	
7.	Pre-processing steps required for predictive parsing	1	31-01-2023		**TLM2**	CO2	
8.	LL(1) Grammar	1	02-02-2023		**TLM1**	CO2	
9.	Examples on LL(1) Parser	1	03-02-2023		**TLM1**	CO2	
10.	Error recovery in predictive parsing temple	1	06-02-2023		**TLM1**	CO2	
11.	Backtracking	1	07-02-2023		**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	09-02-2023		**TLM1**	CO3	
2.	Shift reduce Parsing	1	10-02-2023		**TLM1**	CO3	
3.	Operator precedence Parsing	1	13-02-2023		**TLM1**	CO3	
4.	SLR parser	1	14-02-2023		**TLM1**	CO3	
5.	Examples on SLR parser	1	16-02-2023		**TLM2**	CO3	
6.	CLR parser	1	17-02-2023		**TLM1**	CO3	
7.	Examples on CLR parser	1	27-02-2023		**TLM1**	CO3	
8.	LALR parser	1	02-03-2023		**TLM1**	CO3	
9.	Examples on LALR Parser	1	03-03-2023		**TLM2**	CO3	
10.	Handling Ambiguous Grammar	1	06-03-2023		**TLM2**	CO3	
11.	Error recovery in LR parser	1	07-03-2023		**TLM2**	CO3	
12.	YACC-Automatic parser Generator	1	09-03-2023		**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	10-03-2023		**TLM1**	CO4	
2.	Evaluation order of SDD's	1	13-03-2023		**TLM1**	CO4	
3.	Application of SDD	1	14-03-2023		**TLM1**	CO4	
4.	Syntax directed Translation schemes	1	16-03-2023		**TLM1**	CO4	
5.	Syntax directed Translation schemes	1	17-03-2023		**TLM1**	CO4	
6.	Syntax Tree	1	20-03-2023		**TLM1**	CO4	
7.	Polish Notation	1	21-03-2023		**TLM1**	CO4	
8.	Three Address Code	1	22-03-2023		**TLM1**	CO4	
9.	Static single assignment	2	23-03-2023 To 24-03-2023		**TLM1**	CO4	
10.	Translation of expressions and control flow statements-Boolean expressions	2	28-03-2023 & 31-03-2023		**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	03-04-2023		**TLM1**	CO5	
2.	Principle Sources of optimization	2	04-04-2023 to 06-04-2023		**TLM1**	CO5	
3.	Loop Optimization	2	07-04-2023 10-04-2023		**TLM1**	CO5	
4.	Design issues & Object code forms	1	11-04-2023		**TLM1**	CO5	
5.	Optimization of Basic Blocks	1	13-04-2023		**TLM1**	CO5	
6.	DAG Representation of basic blocks	1	14-04-2023		**TLM1**	CO5	
7.	Code Generation using DAG	1	17-04-2023		**TLM1**	CO5	
8.	A simple Code Generator	1	18-04-2023		**TLM1**	CO5	
9.	Peephole Optimization	1	20-04-2023		**TLM1**	CO5	
10.	Register Allocation and assignment	1	21-04-2023		**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 engineer**ing 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	An ability to apply software engineering practices and strategies in software project development using open-source programming environment for the success of organization
PSO 2	An Ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Dr. D Veeraiah	Dr. D Veeraiah	Dr.D.Venkata Subbaiah	Dr. D Veeraiah
Signature				

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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

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., CSE(B) and AIDS, III-Sem., A.Y : 2022-23

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	27-12-2022		**TLM2**	
2.	Basic definitions	1	29-12-2022		**TLM2**	
3.	Types of Disasters	1	30-12-2022		**TLM2**	
4.	Concept of disaster management	1	31-12-2022		**TLM2**	
5.	Disaster management cycle	1	03-01-2023		**TLM2**	
6.	Vulnerability	1	05-01-2023		**TLM2**	
7.	Mitigation	1	06-01-2023		**TLM2**	
8.	Natural disasters: Drought and cyclone	1	07-01-2023		**TLM2**	
9.	Natural disasters: Earthquake and landslides	1	10-01-2023		**TLM2**	
10.	Engineering and technical failure	1	12-01-2023		**TLM2**	
11.	Nuclear and chemical disaster	1	13-01-2023		**TLM2**	
12.	Accident-related disasters	1	17-01-2023		**TLM2**	
13.	HPC on DM in India- DM Act 2005	1	19-01-2023		**TLM2**	
14.	HPC on DM in India- DM Act 2005	1	20-01-2023		**TLM2**	
15.	Revision		21-01-2023		**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	24-01-2023		**TLM2**	
2.	Impacts due to landslides and fire hazards	1	27-01-2023		**TLM2**	
3.	Impacts due to life &live stock and habitation	1	28-01-2023		**TLM2**	
4.	Agriculture & livelihood loss- health hazards	1	31-01-2023		**TLM2**	
5.	Malnutrition problems	1	02-02-2023		**TLM2**	
6.	Contamination of water	1	03-02-2023		**TLM2**	
7.	Impact on children- environmental loss	1	04-02-2023		**TLM2**	
8.	Revision		07-02-2023		**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	09-02-2023		**TLM2**	
2.	Information system and decision-making tool	1	10-02-2023		**TLM2**	

3.	DM for infra structure	1	14-02-2023		**TLM2**	
4.	DM for electrical substances	1	16-02-2023		**TLM2**	
5.	DM for roads and bridges	1	17-02-2023		**TLM2**	
6.	Mitigation programme for earthquakes	1	28-02-2023		**TLM2**	
7.	Geospatial information in agriculture drought assessment	1	02-03-2023		**TLM2**	
8.	Multimedia technology in disaster risk management and training	1	03-03-2023		**TLM2**	
9.	Transformable indigenous knowledge in disaster reduction	1	04-03-2023		**TLM2**	
10.	Transformable indigenous knowledge in disaster reduction	1	07-03-2023		**TLM2**	
11.	Revision		09-03-2023		**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.	Planning	1	10-03-2023		**TLM2**	
2.	Early warning system	1	14-03-2023		**TLM2**	
3.	Crisis intervention and management	1	16-03-2023		**TLM2**	
4.	Response and Rehabilitation after Disasters	1	17-03-2023		**TLM2**	
5.	Temporary shelter – food and nutrition-safe drinking water	1	18-03-2023		**TLM2**	
6.	Rehabilitation after cyclones	1	21-03-2023		**TLM2**	
7.	Response to drought	1	23-03-2023		**TLM2**	
8.	Response to river erosion	1	24-03-2023		**TLM2**	
9.	Response after earthquake	1	25-03-2023		**TLM2**	
10.	Response after Tsunami- Hunger and Disaster	1	28-03-2023		**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.	Essentials of disaster education	1	31-03-2023		**TLM2**	
2.	School awareness and safety programs, Community based disaster recovery	1	01-04-2023		**TLM2**	
3.	Voluntary agencies and community participation at various stages of disaster management	1	04-04-2023		**TLM2**	
4.	Building community capacity for action	1	06-04-2023		**TLM2**	
5.	Corporate sector and disaster risk reduction	1	11-04-2023		**TLM2**	

6.	A community focused approach	1	13-04-2023		**TLM2**	
7.	Case studies on different disasters in the world-1	1	15-04-2023		**TLM2**	
8.	Case studies on different disasters in the world-2	1	18-04-2023		**TLM2**	
9.	Case studies on different disasters in the world-3	1	20-04-2023		**TLM2**	
10.	Case studies on different disasters in the world-4	1	21-04-2023		**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): 75% best and 25% 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.V.RAMAKRISHNA)

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Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada

L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : M.SWATHI
Course Name & Code : Information Retrieval Systems &20CS21
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech, CSE, VI-Sem., Sec-B A.Y : 2022-23

PRE-REQUISITE: Fundamentals of database concepts, data structures & data warehouse.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to present the basic concepts in information retrieval and the significance of various indexing and searching techniques for informatin retrieval.

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

CO1	Identify the basic concepts of Information retrieval system.. (Remember – L1)
CO2	Describe the taxonomy of different information retrieval models.(Understand-L2)
CO3	Demonstrate and evaluate automatic indexing, document & term clustering techniques. (Understand-L2)
CO4	Demonstrate and evaluate various searching techniques. (Understand- L2)
CO5	Evaluate text processing techniques and operations in information retrieval system. (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	2	3	3	3	-	-	-	-	-	-	-	-	-	-	-
CO2	2	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO3	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO4	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO5	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
1 - Low			**2 –**Medium						**3 -** High						

TEXTBOOKS:

T1 Kowalski, Gerald, Mark T Maybury — Information Storage & Retrieval Systems: Theory and Implementation||, Kluwer Academic Press, 2 nd edition, 2002.

REFERENCE BOOKS:

R1 C. D. Manning, P. Raghavan, and H. Schutze , An Introduction to Information Retrieval, Cambridge University Press, 2009.

R2 William B Frakes , Ric do BaezaYates , "Information Retrieval Data Structures and Algorithms", Pearson Education, 1992.

R3 https://epdf.tips/queue/information-storage-and-retrieval-systems-theory-andimplementation- the-informat.html

R4 Robert Korthagen, "Information Storage & Retrieval", John Wiley & Sons,3 rd Edition,2011.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction & Information Retrieval System Capabilities

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.	UNIT - I: Introduction: Definition, Objectives	1	26-12-2022		TLM2	
2.	Functional Overview Item Normalization	2	29-12-2022 30-12-2022		TLM2	
3.	Selective dissemination AFB	1	31-12-2022		TLM2	
4.	Relationship to DBMS,	1	02-01-2023		TLM2	
5.	Digital libraries and Data Warehouses	1	05-01-2023		TLM2	
6.	Information Retrieval System Capabilities: Search capabilities	2	06-01-2023 07-01-2023		TLM2	
7.	Information Retrieval System Capabilities: Browse, Miscellaneous Capabilities	2	09-01-2023 12-01-2023		TLM2	
8.	Revision	1	19-01-2023		TLM2	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Data Structures & Cataloguing and Indexing

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Introduction, Stemming Algorithms	1	20-01-2023		TLM2	
10.	,Stemming Algorithms	1	21-01-2023		TLM2	
11.	Inverted file structures	1	23-01-2023		TLM2	
12.	N-gram data structure,	1	28-01-2023		TLM2	
13.	PAT data structure	1	30-01-2023		TLM2	
14.	Signature file structure, Hypertext data structure	1	02-02-2023		TLM2	
15.	Cataloguing and Indexing	1	03-02-2023		TLM2	

	Objectives					
16.	, Indexing Process	1	04-02-2023		TLM2	
17.	Automatic Indexing,	1	06-02-2023		TLM2	
18.	Information Extraction.	1	09-02-2023		TLM2	
19.	Revision	1	10-02-2023			
No. of classes required to complete UNIT-II: 11				**No. of classes taken:**		

UNIT-III: Automatic Indexing, Document and Term Clustering

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.	Automatic Indexing: Classes of automatic indexing	1	11-02-2023		TLM2	
21.	Statistical indexing,	1	13-02-2023		TLM2	
22.	Natural language	1	16-02-2023		TLM2	
23.	Concept indexing,	1	17-02-2023		TLM2	
24.	Hypertext linkages.	1	27-02-2023		TLM2	
25.	Document and Term Clustering	2	02-03-2023 03-03-2023		TLM2	
26.	Manual clustering	1	04-03-2023		TLM2	
27.	Thesaurus generation	1	06-03-2023		TLM2	
28.	Automatic term clustering	1	09-03-2023		TLM2	
29.	Item clustering	1	10-03-2023		TLM2	
30.	Hierarchy of clusters	1	11-03-2023		TLM2	
31.	Revision	1	13-03-2023		TLM2	
No. of classes required to complete UNIT-III: 13						

UNIT-IV: User Search techniques & Information visualization

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Search statements and binding,	1	16-03-2023		TLM2	
33.	Similarity measures and ranking	1	17-03-2023		TLM2	
34.	Similarity measures and ranking	1	18-03-2023		TLM2	
35.	Relevance feedback,	1	20-03-2023		TLM2	
36.	Selective dissemination of information search	1	23-03-2023		TLM2	
37.	Selective dissemination of	1	24-03-2023		TLM2	

	information search					
38.	weighted searches of Boolean systems	1	25-03-2023		TLM2	
39.	Searching the Internet and hypertext	1	27-03-2023		TLM2	
40.	Information Visualization, Introduction,	1	31-03-2023		TLM2	
41.	Cognition and perception.	1	01-04-2023		TLM2	
42.	Information visualization technologies	1	03-04-2023		TLM2	
43.	Revision	1	06-04-2023		TLM2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Text Search Algorithms & Information System Evaluation

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
44.	Text Search Algorithms Introduction,	1	10-04-2023		TLM2	
45.	Software text search algorithms	1	03-04-2023		TLM2	
46.	Software text search algorithms.	1	06-04-2023		TLM2	
47.	Hardware text search systems	1	10-04-2023		TLM2	
48.	Hardware text search systems	1	13-04-2023		TLM2	
49.	Information System Evaluation: Introduction,	1	15-04-2023		TLM2	
50.	Measures used in system evaluation,	1	17-04-2023		TLM2	
51.	Measurement example – TREC results	1	20-04-2023		TLM2	
52.	Revision-1	1	21-04-2023		TLM2	
No. of classes required to complete UNIT-V: 09				**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	The ability to apply Software Engineering practices and strategies in software development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web application and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Ms.M.Swathi**	**Ms.A.Praneetha**	**Dr.K.Naga Prasanthi**	**Dr.V.Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr.CH. Srinivasa Rao

Course Name & Code : INFORMATION SECURITY (20CS17)

L-T-P Structure : 3-0-0 Credits : 3

Program/Sem/Sec : B.Tech., CSE, VII-Sem., Section – C A. Y : 2022 - 2023

PRE-REQUISITE : Computer Networks, Number theory and programming language

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The Objective of the course is to 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 this course, the student will be able to

CO1	Summarize encryption algorithms to achieve data confidentiality. **(Understand-L2)**
CO2	Apply Secure hash functions for attaining data integrity. **(Apply-L3)**
CO3	Illustrate the email security mechanisms to achieve authentication. **(Understand- L2)**
CO4	Demonstrate the techniques of web security. **(Understand-L2)**
CO5	Examine the threats and remedial measures for system security. **(Apply-L3)**

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

COs	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2	-	-	1	-	-	-	-	-	1	1	-	-
CO2	2	3	2	-	-	1	-	-	-	-	-	1	1	-	-
CO3	2	3	2	-	-	2	-	-	-	-	-	1	1	-	-
CO4	2	1	2	-	-	2	-	-	-	-	-	1	1	-	-
CO5	2	2	1	-	-	1	-	-	-	-	-	1	1	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

1- Low **2 –**Medium **3** High

TEXTBOOKS:

T1 William Stallings, "Network Security Essentials (Applications and Standards)", Pearson
T2 Education, 1999.
William Stallings, "Cryptography and Network Security", PHI/Pearson, fourth edition, 2000.

REFERENCE BOOKS:

R1 Whitman, "Principles of Information Security", Thomson, PHI, 2000.
R2 Robert Bragg, Mark Rhodes, Network Security: The complete reference, TMH
R3 Buchmann, Introduction to Cryptography, Springer,2010.
R4 Jeetendra pande, Ajay, "Digital Foresnsics', ISBN: 978-93-84813-94-9.

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 to IS,	1	26/12/2022			
2.	Security Attacks	1	27/12/2022			
3.	Security Services, Mechanisms	1	29/12/2022			
4.	Integrity, Authentication Confidentiality & &Non-Repudiation	1	31/12/2022			
5.	Substitution Techniques,	1	02/01/2023			
6.	Transposition Techniques	1	03/01/2023			
7.	Block Cipher, Block Cipher	1	05/01/2023			
8.	Fiestal Structure		07/01/2023			
9.	DES, Triple DES Algorithm	1	09/01/2023			
10.	AES Algorithm	1	10/01/2023			
11.	Cipher Block Modes of Operations	1	12/01/2023			
12.	Placement of encryption	1	19/01/2023			
13.	Traffic Analysis	1	21/01/2023			
14.	Key Distribution	1	23/01/2023			
15.	Assignment-1	1	24/01/2023			
No. of classes required to complete UNIT-I		11				

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
16.	Approaches of Message Authentication,	1	28/01/2023			
17.	Hash & MAC functions	1	30/01/2023			
18.	HMAC Algorithm	1	31/01/2023			
19.	Public-Key Encryption Algorithm- RSA	1	02/02/2023			
20.	Diffie –Hellman Key Exchange Algorithm	1	04/02/2023			
21.	SHA-512	1	06/02/2023			
22.	Digital Signatures	1	07/02/2023			
23.	Public Key Infrastructure, Digital Certificates	1	09/02/2023			
24.	Certificate Authority, Key Management	1	11/02/2023			
25.	Kerberos, X.509 Directory Authentication Service	1	13/02/2023			
26.	Assignment-2	1	14/02/2023			
sNo. of classes required to complete UNIT-II		10		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
27.	Email privacy, Pretty Good Privacy (PGP)	1	16/02/2023			
28.	PGP Key Management	1	27/02/2023			
29.	MIME and S/ MIME	1	28/02/2023			
30.	IP Security Overview, IP Security Architecture,	1	02/03/2023			
31.	Authentication Header Encapsulating Security Payload,	1	04/03/2023			
32.	Tunnel and Transport Modes	1	06/03/2023			
33.	Combining Security Associations, Key Exchange	1	07/03/2023			
34.	Cryptographic Suites	1	09/03/2023			
35.	Unit Overview and Discussion	1	11/03/2023			
36.	Assignment - 3	1	13/03/2023			
No. of classes required to complete UNIT-III		10		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
37.	Web Security Requirements	1	14/03/2023			
38.	Secure Socket Layer (SSL)Architecture,	1	16/03/2023			
39.	SSL Handshake Protocol	1	18/03/2023			
40.	Transport Layer Security	1	20/03/2023			
41.	Secure Electronic Transaction (SET)	1	21/03/2023			
42.	Payment Processing	1	23/03/2023			
43.	HTTPs. HTTP vs HTTPs	1	25/03/2023			
44.	Unit Overview and Discussion	1	27/03/2023			
No. of classes required to complete UNIT-IV		08		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
45.	Intruder Behaviour Patterns	1	28/03/2023			
46.	Intrusion Techniques	1	03/04/2023			
47.	Honeypot	1	04/04/2023			
48.	Malicious Software	1	06/04/2023			
49.	Viruses and Related Threats	1	08/04/2023			
50.	DDOoS	1	10/04/2023			
51.	Firewall Design principles	1	11/04/2023			
52.	Trust Management System	1	13/04/2023			
53.	Introduction to Digital forensics	1	15/04/2023			
54.	Unit 1,2,3,4&5 Overview and Discussion	1	17/04/2023			
55.	Assignment-5	1	18/04/2023			
No. of classes required to complete UNIT-V		12		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– 1 (Units I,II&III(Half of the Syllabus))	**A1=5**
I-Descriptive Examination (Units I, II&III (Half of the Syllabus))	**M1=15**
I-Quiz Examination (Units I, II&III (Half of the Syllabus))	**Q1=10**
Assignment– 2 (Units III (remaining Half of the Syllabus),IV&V))	**A2=5**
II- Descriptive Examination (Units III (remaining Half of the Syllabus), IV&V))	**M2=15**
II-Quiz Examination (Units III (remaining Half of the Syllabus), IV&V))	**Q2=10**
Mid Marks=80% of Max((M1+A1+Q1),(M2+A2+Q2))+ 20% of Min((M1+A1+Q1),(M2+A2+Q2))	**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 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, demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: 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, 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	**Programming Paradigms:** The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization
PSO 2	**Data Engineering:** The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	**Software Engineering:** To inculcate an ability to analyze, design and implement database applications

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Ch. Srinivasa Rao	Dr. B. Manaswini	Dr.D.V. Subbaiah	Dr. D. Veeraiah
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech. IV-Sem., CSE

ACADEMIC YEAR : 2021-22

COURSE NAME & CODE : **INFORMATION SECURITY LAB & 20CS61**

L-T-P STRUCTURE : 0-0-3 **COURSE CREDITS** : 1.5

COURSE INSTRUCTOR : **CH. SRINIVASA RAO**

Pre-requisites: : Computer Programming, Mathematics, Computer Networks.

Course Educational Objectives (CEOs):

The Objective of the course is to provide practical level training that enables the usage of security algorithms for handling security projects. It also provides foundation level training for network analysis to find out the intruders in a network traffic.

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

CO 1 Demonstrate the security concepts, type of attacks and network security algorithms. (Understand - L2)

CO 2 Apply symmetric and asymmetric cryptography technique to encrypt and decrypt text. (Apply - L3

CO 3 Apply network-based tools for network analysis.(Apply - L3)

CO 4 Improve individual / teamwork skills, communication & report writing skills with ethical values.

1. Course Articulation Matrix:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-
CO3	3	-	-	-	3		-	-	-	-	-	-	-	1	-
CO4	-	-	-	-	-	-	-	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:

T1 William Stallings, "Network Security Essentials (Applications and Standards)", Pearson Education, 1999.

T2 Snort 2.1 Intrusion Detection by Jay Beale, Andrew R.Baker , Second Editio

REFERENCE BOOK(S):

1.William Stallings, "Cryptography and Network security", Pearson Education, Fourth Edition.Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language UserGuide", Pearson Education, 2nd Edition, ISBN: 0- 201-57168-4, 1998.

2. https://www.snort.org/documents/snort-3-1-0-0-on-ubuntu-18-202007.

3. https://www.wireshark.org/download/docs/user-guide.pdf

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	Teaching Learning Methods	HOD Sign Weekly
	Lab Cycle-1	3 3	28/12/2022 04/01/2023		**DM5**	
2.	Lab Cycle -2	3 3	11/01/2023 18/01/2023		**DM5**	
3.	Lab Cycle-3	3 3	25/01/2023 01/02/2023		**DM5**	
4.	Lab Cycle-4	3	08/02/2023		**DM5**	
5.	Lab Cycle-5	3	15/02/2023		**DM5**	
6.	Lab Cycle-6	3	15/03/2023		**DM5**	
7.	Lab Cycle-7	3	29/03/2023		**DM5**	
8.	Lab Cycle-8	3	12/04/2023		**DM5**	
9.	Lab Cycle-9	3	19/04/2023		**DM5**	

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

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 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	**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
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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Ch. Srinivasa Rao**	**Dr. B. Manaswini**	**Dr.D.V. Subbaiah**	**Dr. D. Veeraiah**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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L.B. REDDY NAGAR, MYLAVARAM,NTR DIST., A.P.-521 230.
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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

Name of Course Instructor : **Dr. Sujith Kumar Rath& Mr. B Sagar**
Course Name & Code : **Soft skills & soft skills Laboratory (20HSS1)**
L-T-P Structure : **0-0-1+2** **Credit : 2**
Program/Sem/Sec : **B.Tech.CSE-B , VI-Sem.,** **A.Y: 2022-23**

Course Description & Objectives:

The Soft Skills Laboratory course equips students with required behavioural, 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	**Infer** the self awareness and personality **(Understand – L2)**
CO2	Work effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality.**(Apply – L3)**
CO3	Communicate through verbal/oral communication and improve the listening skills**(Apply – L3)**
CO4	**Relate** thecritical & lateral thinking while dealing with personal/social/professional issues. **(Apply – L3)**

Course Content:

Personality Development Skills

Role of language in Personality – How language reflects, impactsPersonality – Using gender-neutral language in MNCs – being culturally-sensitive-Personality Traits- Grooming & Dress code

Activities: Group Discussion/Role play/Presentations (authentic materials: News papers, pamphlets and news clippings)

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

ProfessionalSkills:
Career Planning- job vs. career- goal setting- SWOT analysis-Timemanagement – 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.

REFERENCEBOOKS:

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

CSE-B

S.No.	No. of Lecture Hours	Date	Planned Topics	Actual Date	HOD Sign Weekly
1	1	27-12-22	Role of language in personality		
2	2	27-12-22	Extempore		
3	1	03-01-23	How language reflects, impacts Personality		
4	2	03-01-23	Story Telling		
5	1	10-01-23	Using gender-neutral language in MNCs		
6	2	10-01-23	Case Studies		
7	1	24-01-23	Being culturally-sensitive-Personality Traits- Grooming & Dress code		
8	2	24-01-23	Using authentic materials: News papers, pamphlets and news clippings		
9	1	31-01-23	Career Planning		
10	2	31-01-23	Public Speaking		
11	1	07-02-23	Job vs. career- goal setting		
12	2	07-02-23	Critical Appreciation and Textual Analysis		
13	1	14-02-23	SWOT analysis		

14	2	14-02-23	Writing a review on a given short story/videos/book		
15	1	28-02-23	Time management		
16	2	28-02-23	Empathetic speaking		
17	1	07-03-23	Self-management		
18	2	07-03-23	Telephonic conversation		
19	1	14-03-23	Stress-management		
20	2	14-03-23	Situation based dialogues		
21	1	21-03-23	Effective Resume-Writing and presentation		
22	2	21-03-23	Listening to dialogues and analyzing		
23	1	28-03-23	Interview Skills		
24	2	28-03-23	Pronunciation Practice		
25	1	18-04-23	Body Language, Postures, Gestures, Eye contact		
26	2	18-04-23	Mock interviews		

Signature of Faculty

Signature of HOD

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.B. MANASWINI

Course Name & Code **:** INFORMATION SECURITY (20CS17)

L-T-P Structure **:**3-0-0 Credits: 3

Program/Sem/Sec **:** B.Tech., CSE, VI-Sem., Section – C A.Y : 2022- 2023

PRE-REQUISITE: Knowledge of Computer Networks, Number theory andprogramming language.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the 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

CO1	Summarize encryption algorithms to achieve data confidentiality. **(Understand-L2)**
CO2	Apply Secure hash functions for attaining data integrity. **(Apply-L3)**
CO3	Illustrate the email security mechanisms to achieve authentication. **(Understand-L2)**
CO4	Demonstrate the techniques of web security. **(Understand-L2)**
CO5	Examine the threats and remedial measures for system security. **(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	2	-	-	-	-	-	-	-	-	-	2	-	2	-
CO2	3	2	-	-	-	-	-	-	-	-	-	2	-	2	-
CO3	3	2	-	-	-	-	-	-	-	-	-	2	-	2	-
CO4	2	3	-	-	-	-	-	-	-	-	-	2	-	2	-
CO5	2	2	-	-	-	-	-	-	-	-	-	2	-	2	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

1- Low **2** –Medium **3** High

TEXT BOOKS:

T1 William Stallings, "Network Security Essentials (Applications and Standards)", Pearson Education, 1999.

T2 William Stallings, "Cryptography and Network Security", PHI/Pearson, fourth edition, 2000.

REFERENCE BOOKS:

R1 Whitman, "Principles of Information Security", Thomson,PHI, 2000
R2 Robert Bragg, Mark Rhodes, Network Security: The complete reference, TMH
R3 Buchmann, Introduction to Cryptography,Springer,2010.
R4 Jeetendra pande, Ajay, "Digital Foresnsics', ISBN: 978-93-84813-94-9
R5 https://www.mat.unical.it/ianni/storage/Intro-2013.ppt
R6 http://www.inf.ufsc.br/~bosco.sobral/ensino/ine5680/material-cripto-seg/2014
R7 http://www.williamstallings.com/netsec/netsec4e.html
R8 https://www.cs.kau.se/cs/dvgc19/ch14.pdf
R9 https://www.ntut.edu.tw/~jhwang/IS

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 to IS, Security Attacks	1	26/12/2022		TLM1, TLM2	
2.	Security Services, Security Mechanisms	1	27/12/2022		TLM1, TLM2	
3.	Integrity, Authentication Confidentiality & Non-Repudiation, Access Control, Availability	1	29/12/2022		TLM1, TLM2	
4.	A Model for Internet Security, Conventional Encryption Principles-Substitution	1	30/12/2022		TLM1, TLM2	
5.	Transposition Techniques	1	02/01/2023		TLM1, TLM2	
6.	Conventional Encryption Algorithms-DES	1	05/01/2023		TLM1, TLM2	
7.	Triple DES	1	06/01/2023		TLM1, TLM2	

8.	AES Algorithm	1	09/01/2023		TLM1, TLM2	
9.	Block Cipher &Fiestal Structure,	1	10/01/2023		TLM1, TLM2	
10.	Cipher Block Modes of Operations (CBC, CFB only)	1	19/01/2023		TLM1, TLM2	
11.	Stream Ciphers & RC4	1	20/01/2023		TLM1, TLM2	
12.	Placement of encryption(Location of Encryption Devices)	1	23/01/2023		TLM1, TLM2	
13.	Traffic Analysis, Key Distribution	1	24/01/2023		TLM1, TLM2	
14.	Assignment-1/Tutorial-1	1	24/01/2023		TLM3	
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
15.	Approaches of Message Authentication,MD5	1	27/01/2023		TLM1, TLM2	
16.	SHA-512	1	30/01/2023		TLM1, TLM2	
17.	HMAC Algorithm	1	31/01/2023		TLM1, TLM2	
18.	Public-Key Cryptography Principles	1	02/02/2023		TLM1, TLM2	
19.	Public-Key Cryptography Algorithms – RSA	1	03/02/2023		TLM1, TLM2	
20.	Diffie –Hellman Key Exchange Algorithm	1	06/02/2023		TLM1, TLM2	
21.	Digital Signatures	1	07/02/2023		TLM1, TLM2	
22.	Public Key Infrastructure	1	09/02/2023		TLM1, TLM2	

23.	Public Key Infrastructure	1	09/02/2023		TLM1, TLM2	
24.	Digital Certificates	1	10/02/2023		TLM1, TLM2	
25.	Certificate Authority	1	10/02/2023		TLM1, TLM2	
26.	Key Management.	1	13/02/2023		TLM1, TLM2	
27.	X.509 Directory Authentication Service	1	14/02/2023		TLM1, TLM2	
28.	Assignment-2/ Tutorial-2	1	14/02/2023		TLM3	
No. of classes required to complete UNIT-II		12		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
29.	Email privacy, Pretty Good Privacy (PGP)	1	16/02/2023		TLM1, TLM2	
30.	PGP Key Management	1	16/02/2023		TLM1, TLM2	
31.	MIME and S/ MIME, IP Security Overview, Arch.	1	17/02/2023		TLM1, TLM2	
32.	Authentication Header Encapsulating Security Payload,	1	27/02/2023		TLM1, TLM2	
33.	Tunnel and Transport Modes	1	28/02/2023		TLM1, TLM2	
34.	Combining Security Associations, Key Exchange	1	02/03/2023		TLM1, TLM2	
35.	Cryptographic Suites	1	03/03/2023		TLM1, TLM2	
36.	Assignment – 3/ Tutorial-3	1	03/03/2023		TLM3	
No. of classes required to complete UNIT-III		06		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
37.	Web Security Requirements	1	06/03/2023		TLM1, TLM2	
38.	Secure Socket Layer (SSL) Architecture, Protocols	1	07/03/2023		TLM1, TLM2	
39.	SSL Handshake Protocol	1	09/03/2023		TLM1, TLM2	
40.	Transport Layer Security	1	10/03/2023		TLM1, TLM2	
41.	Transport Layer Security Approaches	1	13/03/2023		TLM1, TLM2	
42.	Secure Electronic Transaction (SET)	1	14/03/2023		TLM1, TLM2	
43.	Payment Processing	1	16/03/2023		TLM1, TLM2	
44.	HTTPs. HTTP vs HTTPs	1	17/03/2023		TLM1, TLM2	
45.	Unit Overview and Discussion	2	21/03/2023		TLM1, TLM2	
46.	Assignment – 4/ Tutorial-4	1	23/03/2023		TLM3	
No. of classes required to complete UNIT-IV		11		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
47.	Intruders	3	28/03/2023		TLM1, TLM2	
48.	Viruses and Related Threats	3	06/04/2023		TLM1, TLM2	
49.	Firewall Design principles	2	11/04/2023		TLM1, TLM2	
50.	Trust Management System	2	17/04/2023		TLM1, TLM2	
51.	Introduction to Digital Forensics	1	18/04/2023		TLM1, TLM2	
52.	Assignment-5/ Tutorial-5	1	20/04/2023		TLM3	

No. of classes required to complete UNIT-V	12		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 Regulations):

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 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, demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: 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, 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	The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr.B.Manaswini	Dr.B.Manaswini	Dr.D.V.Subbaiah	Dr.D.Veeraiah

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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: M.Kiran Kumar
Course Name & Code : Compiler Design, 20CS18
L-T-P Structure : **3-0-0** **Credits:** 03
Program/Sem/Sec : B.Tech-CSE / VI SEM / C
A.Y. : 2022-23

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	2	1	
CO2	3	2										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	26-12-2022		**TLM1**	CO1	
2.	Compiler Vs Interpreter	1	27-12-2022		**TLM1**	CO1	
3.	The Phases of Compiler	1	28-12-2022		**TLM1**	CO1	
4.	The Phases of Compiler	1	29-12-2022		**TLM1**	CO1	
5.	Compiler Construction Tools	1	02-01-2023		**TLM1**	CO1	
6.	Boot Strapping Concept	1	03-01-2023		**TLM2**	CO1	
7.	The Role of Lexical Analyzer	1	04-01-2023		**TLM2**	CO1	
8.	Input Buffering	1	05-01-2023		**TLM2**	CO1	
9.	Input Buffering	1	09-01-2023		**TLM2**	CO1	
10.	Specification of Tokens	1	10-01-2023		**TLM2**	CO1	
11.	Recognition of Tokens	1	11-01-2023		**TLM1**	CO1	
12.	LEX Tools	1	12-01-2023		**TLM1**	CO1	
13.	Examples on LEX Tool	1	18-01-2023		**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	19-01-2023		**TLM1**	CO2	
2.	Writing a Grammar	1	23-01-2023		**TLM1**	CO2	
3.	Elimination of left recursion	1	24-01-2023		**TLM2**	CO2	

4.	Left factoring	1	25-01-2023		**TLM1**	CO2	
5.	Recursive decent parsing	1	30-01-2023		**TLM1**	CO2	
6.	Predictive Parsing	1	31-01-2023		**TLM1**	CO2	
7.	Pre-processing steps required for predictive parsing	1	01-01-2023		**TLM2**	CO2	
8.	LL(1) Grammar	1	02-02-2023		**TLM1**	CO2	
9.	Examples on LL(1) Parser	1	06-02-2023		**TLM1**	CO2	
10.	Error recovery in predictive parsing temple	1	07-02-2023		**TLM1**	CO2	
11.	Backtracking	1	08-02-2023		**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	09-02-2023		**TLM1**	CO3	
2.	Shift reduce Parsing	1	13-02-2023		**TLM1**	CO3	
3.	Operator precedence Parsing	1	14-02-2023		**TLM1**	CO3	
4.	SLR parser	1	15-02-2023		**TLM1**	CO3	
5.	Examples on SLR parser	1	16-02-2023		**TLM2**	CO3	
6.	CLR parser	1	20-02-2023		**TLM1**	CO3	
7.	Examples on CLR parser	1	21-02-2023		**TLM1**	CO3	
8.	LALR parser	1	22-02-2023		**TLM1**	CO3	
9.	Examples on LALR Parser	1	23-02-2023		**TLM2**	CO3	
10.	Handling Ambiguous Grammar	1	27-02-2023		**TLM2**	CO3	
11.	Error recovery in LR parser	1	28-02-2023		**TLM2**	CO3	
12.	YACC-Automatic parser Generator	1	01-03-2023		**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	02-03-2023		**TLM1**	CO4	
2.	Evaluation order of SDD's	1	06-03-2023		**TLM1**	CO4	
3.	Application of SDD	1	13-03-2023		**TLM1**	CO4	
4.	Syntax directed Translation schemes	1	14-03-2023		**TLM1**	CO4	
5.	Syntax directed Translation schemes	1	15-03-2023		**TLM1**	CO4	
6.	Syntax Tree	1	16-03-2023		**TLM1**	CO4	
7.	Polish Notation	1	20-03-2023		**TLM1**	CO4	
8.	Three Address Code	1	21-03-2023		**TLM1**	CO4	
9.	Static single assignment	2	23-03-2023 & 27-03-2023		**TLM1**	CO4	
10.	Translation of expressions and control flow statements-Boolean expressions	2	28-03-2023 & 29-03-2023		**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	03-04-2023		**TLM1**	CO5	
2.	Principle Sources of optimization	2	04-04-2023 & 05-04-2023		**TLM1**	CO5	
3.	Loop Optimization	2	06-04-2023 & 10-04-2023		**TLM1**	CO5	
4.	Design issues & Object code forms	1	11-04-2023		**TLM1**	CO5	
5.	Optimization of Basic Blocks	1	12-04-2023		**TLM1**	CO5	
6.	DAG Representation of basic blocks	1	13-04-2023		**TLM1**	CO5	
7.	Code Generation using DAG	1	17-04-2023		**TLM1**	CO5	
8.	A simple Code	1	18-04-2023		**TLM1**	CO5	

	Generator						
9.	Peephole Optimization	1	19-04-2023		**TLM1**	CO5	
10.	Register Allocation and assignment	1	20-04-2023		**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 engineer**ing 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	An ability to apply software engineering practices and strategies in software project development using open-source programming environment for the success of organization
PSO 2	An Ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	M.Kiran Kumar	Dr. D Veeraiah	Dr.D.Venkata Subbaiah	Dr. D Veeraiah
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PROGRAM	**: B.TECH-CSE**-VI-Sem-C Sec
ACADEMIC YEAR	**:** 2022-23
COURSE NAME & CODE	**: BIG DATA ANALYTICS & 20CS19**
L-T-P STRUCTURE	**:** 3-0-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**: Mr.P.Nagababu**
COURSE COORDINATOR	**: Mr.G.Vijaya Suresh**

1. Pre-requisites:

- Database Management Systems ,Data Warehousing and Data Mining.

2. 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

3. Course Outcomes (COs): At the end of the course, the 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 MapReduce mechanism **(Apply - L3)**
CO4	Develop structured data processing tools **(Apply- L3)**
CO5	Develop semi/unstructured data processing tools **(Apply – L3)**

4. 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	3	1	-	-	-	-	-	-	-	-	-	2	-	-	-
CO2	2	-	2	-	-	-	-	-	-	-	-	2	3	-	-
CO3	2	-	2	-	-	-	-	--	-	-	-	2	-	-	-
CO4	2	3	-	-	1	-	-	-	-	-	-	2	-	-	-
CO5	2	3	-	-	1	-	-	-	-	-	-	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

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

SYLLABUS

UNIT – I

Introduction to Big data

Types of Digital Data, Classification of Digital Data, Characteristics of Data, Evolution of Big Data, Definition of Big Data, Challenges with Big Data, What is Big Data?, Other Characteristics of Data Which are not Definitional Traits of Big Data, Why Big Data?, analyzing Data with Unix tools, Analyzing Data with Hadoop, Hadoop Streaming, Hadoop Echo System.

UNIT – II

Hadoop Distributed File System

The Design of HDFS, HDFS Concepts, Command Line Interface, Hadoop file system interfaces, Data flow, Data Ingestion with Sqoop and Hadoop archives, Hadoop I/O: Compression, Serialization, Avro and File-Based Data structures.

UNIT – III

MapReduce Technique

How MapReduce works?, Anatomy of a Map Reduce Job Run, Failures, Job Scheduling, Shuffle and Sort, Task Execution, Map Reduce Types and Formats, Map Reduce Features.

UNIT – IV

Structured Data Processing Tools

Hive: Installation, Running Hive, HiveQL, Tables, Querying Data, User Defined functions

Sqoop: Introduction, generate code, Database import, working with imported data, Importing large objects, performing an exports.

UNIT – V

Semi-structured and unstructured Data Processing Tools

Pig: Introduction to PIG, Execution Modes of Pig, Comparison of Pig with Databases, Grunt,Pig Latin, User Defined Functions, Data Processing operators.

HBase: Basics, Concepts, Clients, Example, HBase Versus RDBMS..

TEXT BOOKS:

T1	Tom White "Hadoop: The Definitive Guide" Third Edit, O'reily Media, 2012
T2	Big Data and Analytics, 2ed Seema Acharya, Subhashini Chellappan, Wiley 2015.

REFERENCE BOOKS:

R1	Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
R2	Jay Liebowitz, "Big Data and Business Analytics" Auerbach Publications, CRC press (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	Anand Rajaraman and Jefrey David Ulman, "Mining of Massive Datasets", Cambridge University Press, 2012.
R5	Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", John Wiley & sons, 2012.
R6	Glen J. Myat, "Making Sense of Data", John Wiley & Sons, 2007
R7	Pete Warden, "Big Data Glossary", O′Reily, 2011.
R8	ArvindSathi, "BigDataAnalytics: Disruptive Technologies for Changing the Game", MC Press, 2012

Course Delivery 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	Learning Outcome COs	HOD Sign Weekly
1.	Definition of Big Data, What is Big Data	1	26-12-2022		TLM1	CO1	
2.	Evolution of Big Data	1	28-12-2022		TLM1	CO1	
3.	Characteristics of Data	1	29-12-2022		TLM1	CO1	
4.	Types of Digital Data, Classification of Digital Data	1	30-12-2022		TLM1	CO1	
5.	Challenges with Big Data	1	02-01-2023		TLM1	CO1	
6.	Other Characteristics of Data Which are not Definitional Traits of Big Data	2	04-01-2023 & 05-01-2023		TLM1	CO1	
7.	Why Big Data, analyzing Data with Unix tools	1	06-01-2023		TLM1	CO1	
8.	Analyzing Data with Hadoop	1	09-01-2023		TLM1	CO1	
9.	Hadoop Streaming	1	11-01-2023		TLM1	CO1	
10.	Hadoop Echo System	1	12-01-2023		TLM1	CO1	
	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	Learning Outcome COs	HOD Sign Weekly
11.	The Design of HDFS	2	18-01-2023& 19-01-2023		TLM1	CO2	
12.	HDFS Concepts	2	20-01-2023& 23-01-2023		TLM1	CO2	
13.	Command Line Interface	1	25-01-2023		TLM1	CO2	
14.	Hadoop file system interfaces, Data flow	2	27-01-2023& 30-01-2023		TLM1	CO2	
15.	Data Ingestion with Sqoop and Hadoop archives	2	01-02-2023& 02-02-2023		TLM1	CO2	
16.	Hadoop I/O: Compression	1	03-02-2023		TLM1	CO2	
17.	Serialization, Avro and File-Based Data structures	2	06-02-2023& 08-02-2023		TLM1	CO2	
	No. of classes required to complete UNIT-II	**12**			**No. of classes taken:**		

UNIT-III: MapReduce Technique

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
18.	How MapReduce works?,	1	09-02-2023		TLM1	CO3	
19.	Anatomy of a Map Reduce Job Run	2	10-02-2023& 13-02-2023		TLM1	CO3	
20.	Failures, Job Scheduling	2	15-02-2023& 16-02-2023		TLM1	CO3	
21.	Shuffle and Sort, Task Execution	1	27-02-2023		TLM1	CO3	
22.	Map Reduce Types and Formats	2	01-03-2023& 02-03-2023		TLM1	CO3	

23.	Map Reduce Features.	1	03-03-2023		TLM1	CO3	
24.	Revision of unit-1	1	17-02-2023				
25.	Revision of unit-2	1	17-02-2023				
26.	Mid-I Exams		20-02-2023 to 25-02-2023				
27.	Mid-I Exams						
	No. of classes required to complete UNIT-III	**11**			**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	Learning Outcome COs	HOD Sign Weekly
28.	Installation, Running Hive	2	08-03-2023 & 09-03-2023		TLM1	CO4	
29.	HiveQL, Tables	1	10-03-2023		TLM1	CO4	
30.	Querying Data	2	13-03-2023& 15-03-2023		TLM1	CO4	
31.	User Defined functions	1	16-03-2023		TLM1	CO4	
32.	**Sqoop**: Introduction, generate code	1	17-03-2023		TLM1	CO4	
33.	Database import, working with imported data	2	20-03-2023& 22-03-2023		TLM1	CO4	
34.	Importing large objects	1	23-03-2023		TLM1	CO4	
35.	performing an exports	1	24-03-2023		TLM1	CO4	
	No. of classes required to complete UNIT-IV	**11**			**No. of classes taken:**		

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

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
36.	**Pig**: Introduction to PIG	1	27-03-2023		TLM1	CO5	
37.	Execution Modes of Pig	1	29-03-2023		TLM1	CO5	
38.	Comparison of Pig with Databases, Grunt	1	30-03-2023		TLM1	CO5	
39.	Pig Latin, User Defined Functions	2	31-03-2023& 03-04-2023		TLM1	CO5	
40.	Data Processing operators	1	05-04-2023		TLM1	CO5	
41.	**HBase**: Basics, Concepts	2	06-04-2023& 07-04-2023		TLM1	CO5	
42.	Clients, Example	1	10-04-2023		TLM1	CO5	
43.	HBase Versus RDBMS	1	12-04-2023		TLM1	CO5	
44.	Revision of unit-1	2	13-04-2023 & 14-04-2023				
45.	Mid-II Exams		24-04-2023 to 29-04-2023				
	No. of classes required to complete UNIT-V	**12**			**No. of classes taken:**		

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Hadoop Streaming	1	17-04-2023		TLM1	CO1	
2.	Avro and File-Based Data structures	1	19-04-2023		TLM1	CO3	
3.	HBase Versus RDBMS..	1	20-04-2023		TLM1	CO3	

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	26-12-2022	18-02-2023	8W
I Mid Examinations	**20-02-2023**	**25-02-2023**	**1W**
II Phase of Instructions	27-02-2023	24-04-2023	8W
II Mid Examinations	**24-04-2023**	**29-04-2023**	**1W**
Preparation and Practical's	01-05-2023	06-05-2023	1W
Semester End Examinations	08-05-2023	20-05-2023	2W

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

POs:(Program Outcomes)

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	**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
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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	(Mr.P.Nagababu)	(Mr.G.Vijaya Suresh)	(Dr.K..NagaPrasanthi)	(Dr. D. Veeraiah)
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : A.Praneetha
Course Name & Code : Information Retrieval Systems &20CS21
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., VI-Sem., Sec-C A.Y : 2022-23

PRE-REQUISITE: Fundamentals of database concepts, data structures & data warehouse.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to present the basic concepts in information retrieval and the significance of various indexing and searching techniques for informatin retrieval.

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

CO1	Identify the basic concepts of Information retrieval system.. (Remember – L1)
CO2	Describe the taxonomy of different information retrieval models.(Understand-L2)
CO3	Demonstrate and evaluate automatic indexing, document & term clustering techniques. (Understand-L2)
CO4	Demonstrate and evaluate various searching techniques. (Understand- L2)
CO5	Evaluate text processing techniques and operations in information retrieval system. (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	2	3	3	3	-	-	-	-	-	-	-	-	-	-	-
CO2	2	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO3	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO4	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO5	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
1 - Low			**2 –**Medium						**3 -** High						

TEXTBOOKS:

T1 Kowalski, Gerald, Mark T Maybury — Information Storage & Retrieval Systems: Theory and Implementation||, Kluwer Academic Press, 2 nd edition, 2002.

REFERENCE BOOKS:

R1 C. D. Manning, P. Raghavan, and H. Schutze , An Introduction to Information Retrieval, Cambridge University Press, 2009.

R2 William B Frakes , Ric do BaezaYates , "Information Retrieval Data Structures and Algorithms", Pearson Education, 1992.

R3 https://epdf.tips/queue/information-storage-and-retrieval-systems-theory-andimplementation- the-informat.html

R4 Robert Korthagen, "Information Storage & Retrieval", John Wiley & Sons,3 rd Edition,2011.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction & Information Retrieval System Capabilities

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.	UNIT - I: Introduction: Definition, Objectives	1	26-12-2022		TLM2	
2.	Functional Overview Item Normalization	1	27-12-2022		TLM2	
3.	Selective dissemination AFB	1	28-12-2022		TLM2	
4.	Relationship to DBMS,	1	30-12-2022		TLM2	
5.	Digital libraries and Data Warehouses	1	2-1-2023		TLM2	
6.	Information Retrieval System Capabilities: Search capabilities	1	3-1-2023		TLM2	
7.	Information Retrieval System Capabilities: Browse, Miscellaneous Capabilities	1	4-1-2023		TLM2	
8.	Revision	1	6-1-2023		TLM2	
No. of classes required to complete UNIT-I: 8				**No. of classes taken:**		

UNIT-II: Data Structures & Cataloguing and Indexing

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Introduction, Stemming Algorithms	1	9-1-2023		TLM2	
10.	,Stemming Algorithms	1	10-1-2023		TLM2	
11.	Inverted file structures	1	11-1-2023		TLM2	
12.	N-gram data structure,	1	18-1-2023		TLM2	
13.	PAT data structure	1	20-1-2023		TLM2	
14.	Signature file structure, Hypertext data structure	1	23-1-2023		TLM2	
15.	Cataloguing and Indexing	1	24-1-2023		TLM2	

	Objectives					
16.	, Indexing Process	1	25-1-2023		TLM2	
17.	Automatic Indexing,	1	27-1-2023		TLM2	
18.	Information Extraction.	1	30-1-2023		TLM2	
19.	Revision	1	31-1-2023			
No. of classes required to complete UNIT-II: 11				**No. of classes taken:**		

UNIT-III: Automatic Indexing, Document and Term Clustering

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.	Automatic Indexing: Classes of automatic indexing	1	1-2-2023		TLM2	
21.	Statistical indexing,	1	3-2-2023		TLM2	
22.	Natural language	1	6-2-2023		TLM2	
23.	Concept indexing,	1	7-3-2023		TLM2	
24.	Hypertext linkages.	1	8-3-2023		TLM2	
25.	Document and Term Clustering	1	10-3-2023		TLM2	
26.	Manual clustering	1	13-3-2023		TLM2	
27.	Thesaurus generation	1	14-3-2023		TLM2	
28.	Automatic term clustering	1	15-3-2023		TLM2	
29.	Item clustering	1	17-3-2023		TLM2	
30.	Hierarchy of clusters	1	27-2-2023		TLM2	
31.	Revision	1	28-3-2023		TLM2	
No. of classes required to complete UNIT-III: 12						

UNIT-IV: User Search techniques & Information visualization

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Search statements and binding,	1	1-3-2023		TLM2	
33.	Similarity measures and ranking	1	3-3-2023		TLM2	
34.	Similarity measures and ranking	1	6-3-2023		TLM2	
35.	Relevance feedback,	1	7-3-2023		TLM2	
36.	Selective dissemination of information search	1	10-3-2023		TLM2	
37.	Selective dissemination of information search	1	13-3-2023		TLM2	

38.	weighted searches of Boolean systems	1	14-3-2023		TLM2	
39.	Searching the Internet and hypertext	1	15-3-2023		TLM2	
40.	Information Visualization, Introduction,	1	17-3-2023		TLM2	
41.	Cognition and perception.	1	20-3-2023		TLM2	
42.	Information visualization technologies	1	21-3-2023		TLM2	
43.	Revision	1	24-3-2023		TLM2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Text Search Algorithms & Information System Evaluation

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
44.	Text Search Algorithms Introduction,	1	27-3-2023		TLM2	
45.	Software text search algorithms	1	28-3-2023		TLM2	
46.	Software text search algorithms.	1	29-3-2023		TLM2	
47.	Hardware text search systems	1	31-3-2023		TLM2	
48.	Hardware text search systems	1	3-4-2023		TLM2	
49.	Information System Evaluation: Introduction,	1	4-3-2023		TLM2	
50.	Measures used in system evaluation,	1	10-4-2023		TLM2	
51.	Measurement example – TREC results	1	11-4-2023		TLM2	
52.	Revision-1	1	12-4-2023		TLM2	
53.	Revision-1	1	17-4-2023		TLM2	
54.	Revision-1	1	18-4-2023		TLM2	
55.	Revision-1	1	21-4-2023		TLM2	
No. of classes required to complete UNIT-V: 12				**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	The ability to apply Software Engineering practices and strategies in software development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web application and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**A.PRANEETHA**	**A.PRANEETHA**	**Dr.K.NAGAPRASHANTHI**	**Dr.V.VEERAIAH**
Signature				

DEPARTMENT OF MECHANICAL ENGINEERING
COURSE HANDOUT

Part-A

PROGRAM : B.Tech., VI-Sem., CSE, C-Section

ACADEMIC YEAR : 2022-23

COURSE NAME & CODE : RENEWABLE ENERGY SOURCES- 20ME81

L-T-P STRUCTURE : 4-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : Dr.V.Dhana Raju

COURSE COORDINATOR : K. Lakshmi Prasad

PRE-REQUISITES: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): To provide the insights on different non-conventional energy sources, potential, salient features and utilization of solar, wind, geothermal, ocean thermal energy, bio energy and direct energy conversion systems.

COURSE OUTCOMES (COs)

After completion of the course, the student will be able to

CO1: Compute the performance of solar energy harnessing devices and its energy scenario. **(Applying– L3)**

CO2: Apply the principles of energy conversion for wind and geothermal power generating plants. **(Applying - L3)**

CO3: Compare the power generating capacities of tidal energy, wave energy and ocean thermal energy plants. **(Understanding - L2)**

CO4: Illustrate the various biomass power generation system technologies. **(Understanding - L2)**

CO5: Comprehend the direct energy power generation systems. **(Understanding - 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	-	-	-	3	3	-	-	-	-	2	2	-	-
CO2	2	1	-	-	-	3	3	-	-	-	-	2	2	-	-
CO3	1	1	-	-	-	3	3	-	-	-	-	2	2	-	-
CO4	1	1	-	-	-	3	3	-	-	-	-	2	2	-	-
CO5	1	1	-	-	-	3	3	-	-	-	-	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).

BOS APPROVED TEXT BOOKS:

T1 G.D.Rai, Non-Conventional Energy Sources, 5th Edition 2011, Khanna Publishers, New Delhi, India.

T2 Kreith, F and Kreider, J. F., Principles of Solar Engineering, McGraw-Hill, 1978.

BOS APPROVED REFERENCE BOOKS:

R1 John Twidell&Tony Weir, Renewable Energy Resources – 2nd Edition, Taylor & Francis

R2 G.N.Tiwari, Solar Energy – Fundamentals, Design, Modelling and Applications –Narosa Publication Ltd.,2000.

R3 Ashok V Desai, Non-Conventional Energy- Wiley Eastern, 2000.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I : GLOBAL AND NATIONAL ENERGY SCENARIO & SOLAR ENERGY HARNESSING DEVICES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Course Outcomes & Blooms Taxonomy Levels	1	27-12-22					
2.	Over view of conventional & renewable energy sources	1	28-12-22		**TLM1/ TLM2**	CO1	T1	
3.	Need & Development of renewable energy sources	1	29-12-22		**TLM1/ TLM2**	CO1	T1	
4.	Types of renewable energy systems.	1	30-12-22		**TLM1/ TLM2**	CO1	T1	
5.	Energy available from Sun, Solar radiation data,	1	03-01-23		**TLM1/ TLM2**	CO1	T1	
6.	Solar radiation geometry	1	04-01-23		**TLM1/ TLM2**	CO2	T1	
7.	Flat plate and Concentrating collectors	1	05-01-23		**TLM1/ TLM2**	CO1	T1	
8.	Mathematical analysis of Flat plate collectors and collector efficiency	1	06-01-23		**TLM1/ TLM2**	CO1	T1	
9.	Solar water Heating,	1	10-01-23		**TLM1/ TLM2**	CO2	T1	
10.	Space Heating – Active and Passive heating	1	11-01-23		**TLM1/ TLM2**	CO2	T1	
11.	Solar collector performance testing	1	18-01-23		**TLM1/ TLM2**	CO1	T1	
12.	solar stills and ponds	1	19-01-23		**TLM1/ TLM2**	CO1	T1	
13.	basic principle of power generation in photovoltaic cell	1	20-01-23		**TLM1/ TLM2**	CO1	T1	
14.	Quiz/Assignment	1	24-01-23		**TLM2**	CO1	T1	
No. of classes required to complete UNIT-I		14			No. of classes taken:			

UNIT-II : WIND ENERGY & GEOTHERMAL ENERGY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15.	Wind – characteristics – wind energy conversion systems – types	1	25-01-23		**TLM1/ TLM2**	CO2	T1	
16.	Origin of winds	1	27-01-23		**TLM1/ TLM2**	CO2	T1	
17.	Site selection and energy available in wind	1	31-01-23		**TLM1/ TLM2**	CO2	T1	
18.	Betz model & Interference factor,	1	01-02-23		**TLM1/ TLM2**	CO2	T1	
19.	HAWT and VAWT	1	02-02-23		**TLM1/ TLM2**	CO2	T1	
20.	Power Coefficient Torque Coefficient and thrust coefficient	1	03-02-23		**TLM1/ TLM2**	CO2	T1	
21.	GEOTHERMAL ENERGY: Structure of Earth,	1	07-02-23		**TLM1/ TLM2**	CO2	T1	
22.	Geothermal sources	1	08-02-23		**TLM1/ TLM2**	CO2	T1	
23.	Hot springs, Hot Rocks& Hot Aquifers	1	09-02-23		**TLM1/ TLM2**	CO2	T1	
24.	Interconnection of geothermal fossil systems	1	10-02-23		**TLM1/ TLM2**	CO2	T1	
25.	**Quiz/Assignment**	1	14-02-23		**TLM1/ TLM2**	CO1	T1	
No. of classes required to complete UNIT-II		10			No. of classes taken:			

UNIT-III : TIDAL ENERGY, WAVE ENERGY and OCEAN THERMAL ENERGY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
26.	**Tidal Energy**- Introduction, Origin of Tides,	1	15-02-23		**TLM1/ TLM2**	CO3	T1	
27.	Tidal Power generation	1	16-02-23		**TLM1/ TLM2**	CO3	T1	
28.	Classification of Tidal Power Plant,	1	17-02-23		**TLM1/ TLM2**	CO3	T1	
29.	Site requirements	1	28-02-23		**TLM1/**	CO3	T1	

					TLM2			
30.	**WAVE ENERGY**: Introduction	1	01-03-23		**TLM1/ TLM2**	CO3	T1	
31.	Wave energy and Power	1	02-03-23		**TLM1/ TLM2**	CO3	T1	
32.	Wave Energy devices – Merits and Demerits	1	03-03-23		**TLM1/ TLM2**	CO3	T1	
33.	**OCEAN THERMAL ENERGY**: Introduction	1	07-03-23		**TLM1/ TLM2**	CO3	T1	
34.	Working principle of Ocean Thermal Energy Conversion	1	09-03-23		**TLM1/ TLM2**	CO3	T1	
35.	OTEC Systems, Applications of OTEC	1	10-03-23		**TLM1/ TLM2**	CO3	T1	
36.	Advantages and Disadvantages of OTEC plants.	1	14-03-23		**TLM1/ TLM2**	CO3	T1	
No. of classes required to complete UNIT-III		11			No. of classes taken:			

UNIT-IV : BIO – ENERGY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
37.	**BIO – ENERGY**: Introduction	1	15-03-23		**TLM1/ TLM2**	CO4	T1	
38.	Biomass Energy Sources	1	16-03-23		**TLM1/ TLM2**	CO4	T1	
39.	Aerobic and Anaerobic bio-conversion processes	1	17-03-23		**TLM1/ TLM2**	CO4	T1	
40.	Types of Biogas plants	1	21-03-23		**TLM1/ TLM2**	CO4	T1	
41.	Raw Materials	1	23-03-23		**TLM1/ TLM2**	CO4	T1	
42.	and properties of Bio-gas	1	24-03-23		**TLM1/ TLM2**	CO4	T1	
43.	Status bio gas generation	1	28-03-23		**TLM1/ TLM2**	CO4	T1	
44.	Bio-gas plant Technology and	1	29-03-23		**TLM1/ TLM2**	CO4	T1	
45.	Biomass gasification	1	31-03-23		**TLM1/ TLM2**	CO4	T1	
46.	Types and application of	1	04-04-23		**TLM1/**	CO4	T1	

	gasifier				**TLM2**			
47.	**Quiz/Assignment**	1	06-04-23		**TLM1/ TLM2**	CO4	T1	
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V : DIRECT ENERGY CONVERSION SYSTEMS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
48.	DIRECT ENERGY CONVERSION SYSTEMS: Introduction	1	11-04-23		**TLM1/ TLM2**	CO5	T1	
49.	Peltier effect, seebeck effect, Thomson effect,	1	12-04-23		**TLM1/ TLM2**	CO5	T1	
50.	Fuel Cells-Types and Efficiency of Fuel Cells.	1	13-04-23		**TLM1/ TLM2**	CO5	T1	
51.	Thermoelectric power Generation	1	18-04-23		**TLM1/ TLM2**	CO5	T1	
52.	Thermionic electro power Generation	1	19-04-23		**TLM1/ TLM2**	CO5	T1	
53.	MHD Generator	1	20-04-23		**TLM1/ TLM2**	CO5	T1	
54.	Open and closed systems	1	21-04-23		**TLM1/ TLM2**	CO5	T1	
55.	applications of direct energy energy conversion systems	1	25-04-23		**TLM1/ TLM2**	CO5	T1	
56.	**Quiz/Assignment**	1	26-04-23		**TLM1/ TLM2**	CO5	T1	
No. of classes required to complete UNIT-V		09			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

Academic Calender-A.Y-2022-23

Description	From	To	Weeks
B Tech VI Semester			
Commencement of class work	26.12.2022		
I phase of Instructions	26.12.2022	18.02.2023	8

I Mid Examination	**20.02.2023**	**25.02.2023**	**1**
II phase of Instructions	27.03.2023	22.04.2023	8
II Mid Examination	**24.04.2023**	**29.04.2023**	**1**
Preparation and Practical	01.05.2023	06.05.2023	1
Semester End Examination	**08.05.2023**	**20.05.2023**	**2**

Part - C

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Assignment 1	1	A1=5
Assignment 2	2	A2=5
I-Mid Examination	1,2,3	B1=15
Quiz – 1	1,2,3	Q1=10
Assignment 3	3	A3=5
Assignment 4	4	A4=5
Assignment 5	5	A5=5
II-Mid Examination	3,4,5	B2=15
Quiz – 2	3,4,5	Q2=10
Evaluation of Assignment: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=15
Evaluation of Quiz Marks: Q=75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	1,2,3,4,5	Q=10
Cumulative Internal Examination: A+B+Q	**1,2,3,4,5**	**CIE=30**
Semester End Examinations	**1,2,3,4,5**	**SEE=70**
Total Marks: CIE+SEE	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: To build a professional career and pursue higher studies with sound knowledge in Mathematics, Science and Mechanical Engineering.

PEO2: To inculcate strong ethical values and leadership qualities for graduates to become successful in multidisciplinary activities.

PEO3: To develop inquisitiveness towards good communication and lifelong learning.

PROGRAMME OUTCOMES (POs)

Engineering Graduates will be able to:

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

PSOs

1. To apply the principles of thermal sciences to design and develop various thermal systems.
2. To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.
3. To apply the basic principles of mechanical engineering design or evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr.V.Dhana Raju	Mr. K. Lakshmi Prasad	Dr. P. Vijay Kumar	Dr. S. Pichi Reddy

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.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. B. MANASWINI

Course Name & Code :-INFORMATION SECURITY Lab&20CS61

L-T-P Structure :0-0-3 **Credits:1.5**

Program/Sem/Sec : B.Tech. - CSE/VI/C **A.Y.:**2022-23

PREREQUISITE:Knowledge of Computer Programming, Mathematics, Computer Networks.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of this lab is to provide practical leveltraining that enables the usage of security algorithms for handling security projects. It alsoprovides foundation level training for network analysis to find out the intruders in a networktraffic.

COURSE OUTCOMES (COs): At the end of the course, 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)**
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values.

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	1	-	-	-	-	-	-	-	-	1	-	-	-
CO2	2	2	1	-	-	-	-	-	-	-	-	1	-	-	-
CO3	2	1	-	2	2	-	-	-	-	-	-	1	-	-	-
CO4	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-
1 - Low						**2 –**Medium						**3 –**High			

TEXT BOOKS:

T1	Network Security Essentials (Applications and Standards) by William Stallings Pearson Education, Second Edition.
T2	**Snort 2.1 Intrusion Detection** by Jay Beale, Andrew R.Baker , Second Edition.
T3	**Wireshark Network Analysis** by Laura Chappell, Second Edition.

REFERENCE BOOKS:

R1	William Stallings, "Cryptography and Network security", Pearson Education, Fourth Edition
R2	https://www.snort.org/documents/snort-3-1-0-0-on-ubuntu-18-20.
R3	https://www.wireshark.org/download/docs/user-guide.pdf

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	Teaching Learning Methods	HOD Sign Weekly
1.	Lab Cycle-1	3	03-01-23		**DM5**	
2.	Lab Cycle -2	3	24-01-23		**DM5**	
3.	Lab Cycle-3	3	08-02-23		**DM5**	
4.	Lab Cycle-4	3	22-02-23		**DM5**	
5.	Lab Cycle-5	3	07-03-23		**DM5**	
6.	Lab Cycle-6	3	21-03-23		**DM5**	
7.	Lab Cycle-7	3	04-04-23		**DM5**	
8.	Lab Cycle-8	3	11-04-23		**DM5**	
9.	Lab Cycle-9	3	18-04-23		**DM5**	
10.	Internal exam	3	27-04-23			

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

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 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	**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
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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	(Dr. B.Manaswini)	(Dr.B. Manaswini)	(Dr. D.VSubbaiah)	(Dr. D. Veeraiah)
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.

hodcse@lbrce.ac.in, cseoffice@lbrce.ac.in, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM	**: B.TECH-CSE**-VI-Sem-C Sec
ACADEMIC YEAR	**:** 2022-23
COURSE NAME & CODE	**:** DATA ANALYTICS AND VISUALIZATION LAB & 20CS62
L-T-P STRUCTURE	**:** 0-0-3
COURSE CREDITS	**:** 1.5
COURSE INSTRUCTOR	**: Mr.P.Nagababu**
COURSE COORDINATOR	**: Mr.G.Vijaya Suresh**

PREREQUISITE: Object Oriented programming & Database Management Systems

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

CO1	Demonstrate the installation of Bigdata analytic tools**. (Understand – L2)**
CO2	Apply data modelling techniques to large data sets. **(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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	-	2	2	-	-	-	-	-	-	1	-	-	-
CO2	2	-	-	3	-	-	-	-	-	-	-	1	-	-	-
CO3	2	1	-	2	2	-				-	-	1	-	-	-
CO4	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
1 - Low						**2 –**Medium						**3 –**High			

PART-B

TEXT BOOKS:

T1	Seema Acharya, Subhasini Chellappan, "**Big Data Analytics**" Wiley 2015
T2	Alexander Loth, "**Visual Analytics with Tableau**", ISBN: 978-1-119-56020-3, Wiley 2019.

REFERENCE BOOKS:

R1	Tom White, "**Hadoop: The Definitive Guide**", Third Edit on, O'reily Media, 2012
R2	Michael Berthold, David J. Hand, "**Intelligent Data Analysis**" Springer, 2007.
R3	AnandRajaraman and Jefrey David Ulman, "**Mining of Massive Datasets**", Cambridge University Press,2012.
R4	Jay Liebowitz, "**Big Data and Business Analytics**" Auerbach Publications, CRC press (2013).
R5	ArvindSathi,. "BigDataAnalytics: **Disruptive Technologies for Changing the Game**", MC, Press, 2012, 2001.
R6	http://nptel.ac.in/courses/106104135/48
R7	http://nptel.ac.in/courses/110106064/

PART-C

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.	EXPERIMENT-1	3	26-12-2023 & 02-01-2023		**DM5**	
2.	EXPERIMENT-2	3	09-01-2023& 23-01-2023		**DM5**	
3.	EXPERIMENT-3	3	30-01-2023& 06-02-2023		**DM5**	
4.	EXPERIMENT-4	3	13-02-2023		**DM5**	
5.	EXPERIMENT-5	3	20-02-2023& 27-02-2023		**DM5**	
6.	EXPERIMENT-6	3	06-03-2023		**DM5**	
7.	EXPERIMENT-7	3	13-03-2023		**DM5**	
8.	EXPERIMENT-8	3	20-03-2023		**DM5**	
9.	EXPERIMENT-9	3	27-03-2023		**DM5**	
10.	EXPERIMENT-10	3	03-04-2023		**DM5**	
11.	EXPERIMENT-11	3	10-04-2023		**DM5**	
12.	INTERNAL EXAM	3	17-04-2023			

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

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.
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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.
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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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	(Mr.P.Nagababu)	(Dr.Y.Vijaya Bhaskar Reddy)	(Dr.K.Naga Prasanthi)	(Dr. D. Veeraiah)
Signature				

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM	**: B.TECH-CSE-VI-Sem- C Sec**
ACADEMIC YEAR	**:** 2022-23
COURSE NAME & CODE	**: SERVER-SIDE SCRIPTING LAB &20CS63**
L-T-P STRUCTURE	**:** 0-0-3
COURSE CREDITS	**:** 1.5
COURSE INSTRUCTOR	**: Dr.Y.Vijay Bhaskar Reddy**
COURSE COORDINATOR	**: Dr.Y.Vijay Bhaskar Reddy**

PREREQUISITE: JAVA Programming & Web Technologies

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

CO1	Understand the differences between server-side and client-side scripts, and develop simple server-side web applications. **(Understand - L2)**
CO2	Identify the importance of AJAX, and PHP programming constructs to design server-side web applications. **(Remember - L1)**
CO3	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 between COs, POs & PSOs):

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

REFERENCE BOOKS:

R1	Steven Holzner, "PHP: The Complete Reference", McGraw-Hill Education, 2007.
R2	Kevin Tatroe, Peter MacIntyre, RasmusLerdorf, "Programming in PHP", O'Reilly, 3rd Edition, 2013.
R3	Luke Welling, Laura Thomson, "PHP and MySQL Web Development",Pearson Education, 5th Edition, 2011
R4	Lynn Beighley, Michael Morrison, "Head First PHP & MySQL: A Brain-Friendly Guide", O'Reilly, 1st Edition, 2007

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	Teaching Learning Methods	HOD Sign Weekly
1.	MODULE-1	3	29-12-2022& 05-01-2023		**DM5**	
2.	MODULE-2	3	12-01-2023& 19-01-2023		**DM5**	
3.	MODULE-3	3	02-02-2023& 09-02-2023		**DM5**	
4.	MODULE-4	3	16-02-2023		**DM5**	
5.	MODULE-5	3	23-02-2023& 02-03-2023		**DM5**	
6.	MODULE-6	3	09-03-2023		**DM5**	
7.	MODULE-7	3	16-03-2023		**DM5**	
8.	MODULE-8	3	23-03-2023& 30-03-2023		**DM5**	
9.	MODULE-9	3	06-04-2023		**DM5**	
10.	MODULE-10	3	13-04-2023		**DM5**	
11.	INTERNAL EXAM	3	19-04-2023		**DM5**	

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

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.
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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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	(Dr.Y.Vijay Bhaskar Reddy)	(Dr.Y.Vijay Bhaskar Reddy)	(Dr.K.Naga Prasanthi)	(Dr. D. Veeraiah)
Signature				

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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

Name of Course Instructor : **Dr. Sujith Kumar Rath& Mr. B Sagar**
Course Name & Code : **Soft skills & soft skills Laboratory (20HSS1)**
L-T-P Structure : **0-0-1+2** **Credit : 2**
Program/Sem/Sec : **B.Tech.CSE-C , VI-Sem.,** **A.Y: 2022-23**

Course Description & Objectives:

The Soft Skills Laboratory course equips students with required behavioural, 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	**Infer** the self awareness and personality **(Understand – L2)**
CO2	Work effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality.**(Apply – L3)**
CO3	Communicate through verbal/oral communication and improve the listening skills**(Apply – L3)**
CO4	**Relate** thecritical & lateral thinking while dealing with personal/social/professional issues. **(Apply – L3)**

Course Content:

Personality Development Skills

Role of language in Personality – How language reflects, impactsPersonality – Using gender-neutral language in MNCs – being culturally-sensitive-Personality Traits- Grooming & Dress code

Activities: Group Discussion/Role play/Presentations (authentic materials: News papers, pamphlets and news clippings)

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

ProfessionalSkills:

Career Planning- job vs. career- goal setting- SWOT analysis-Timemanagement – 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.

REFERENCEBOOKS:

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

CSE-C

S.No.	No. of Lecture Hours	Date	Planned Topics	Actual Date	HOD Sign Weekly
1	1	31-12-22	Role of language in personality		
2	2	31-12-22	Extempore		
3	1	07-01-23	How language reflects, impacts Personality		
4	2	07-01-23	Story Telling		
5	1	21-01-23	Using gender-neutral language in MNCs		
6	2	21-01-23	Case Studies		
7	1	28-01-23	Being culturally-sensitive-Personality Traits- Grooming & Dress code		
8	2	28-01-23	Using authentic materials: News papers, pamphlets and news clippings		
9	1	04-02-23	Career Planning		
10	2	04-02-23	Public Speaking		
11	1	04-03-23	Job vs. career- goal setting		
12	2	04-03-23	Critical Appreciation and Textual Analysis		
13	1	11-03-23	SWOT analysis		
14	2	11-03-23	Writing a review on a given short story/videos/book		
15	1	18-03-23	Time management		
16	2	18-03-23	Empathetic speaking		
17	1	25-03-23	Self-management		
18	2	25-03-23	Telephonic conversation		
19	1	01-04-23	Stress-management		
20	2	01-04-23	Situation based dialogues		
21	1	08-04-23	Effective Resume-Writing and presentation		
22	2	08-04-23	Listening to dialogues and analyzing		
23	1	15-04-23	Interview Skills		
24	2	15-004-23	Mock Interviews		

Signature of Faculty

Signature of HOD