

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC '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 & 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, VI-Sem., Section – A	A. Y : 2023 - 2024
PRE-REQUISITE	: Computer Networks, Number theory and programming language	

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The Objective of the course is to course elevate 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 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 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.

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	04/12/2023			
2.	Security Attacks	1	05/12/2023			
3.	Security Services, Mechanisms	1	06/12/2023			
4.	Integrity, Authentication Confidentiality & Non-Repudiation	1	08/12/2023			
5.	Substitution Techniques,	1	09/12/2023			
6.	Transposition Techniques	1	11/12/2023			
7.	Block Cipher, Block Cipher	1	12/12/2023			
8.	Fiestal Structure		13/12/2023			
9.	DES, Triple DES Algorithm	1	15/12/2023			
10.	AES Algorithm	1	16/12/2023			
11.	Cipher Block Modes of Operations	1	18/12/2023			
12.	Placement of encryption	1	19/12/2023			
13.	Traffic Analysis		20/12/2023			
14.	Key Distribution	1	22/12/2023			
15.	Assignment-1	1	23/12/2023			
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	26/12/2023			
17.	Hash & MAC functions	1	27/12/2023			
18.	HMAC Algorithm	1	29/12/2023			
19.	Public-Key Encryption Algorithm- RSA	1	30/12/2023			
20.	Diffie –Hellman Key Exchange Algorithm	1	02/01/2024			
21.	SHA-512	1	03/01/2024			
22.	Digital Signatures	1	05/01/2024			
23.	Public Key Infrastructure, Digital Certificates	1	06/01/2024			
24.	Certificate Authority, Key Management	1	08/01/2024			
25.	Kerberos, X.509 Directory Authentication Service	1	09/01/2024			
26.	Assignment-2	1	10/01/2024			
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	12/01/2024				
28.	PGP Key Management	1	19/01/2024				
29.	MIME and S/ MIME	1	20/01/2024				
30.	IP Security Overview, IP Security Architecture,	1	22/01/2024				
31.	Authentication Header Encapsulating Security Payload,	1	23/01/2024				
32.	Tunnel and Transport Modes	1	24/01/2024				
33.	Combining Security Associations, Key Exchange	1	27/01/2024				
34.	Cryptographic Suites	1	05/02/2024				
35.	Unit Overview and Discussion	1	06/02/2024				
36.	Assignment - 3	1	07/02/2024				
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	09/02/2024			
38.	Secure Socket Layer (SSL)Architecture,	1	12/02/2024			
39.	SSL Handshake Protocol	1	13/02/2024			
40.	Transport Layer Security	1	14/02/2024			
41.	Secure Electronic Transaction (SET)	1	17/02/2024			
42.	Payment Processing	1	19/02/2024			
43.	HTTPs. HTTP vs HTTPs	1	20/02/2024			
44.	Unit Overview and Discussion	1	21/02/2024			
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	23/02/2024			
46.	Intrusion Techniques	1	24/02/2024			
47.	Honeypot	1	26/02/2024			
48.	Malicious Software	1	27/02/2024			
49.	Viruses and Related Threats	1	01/03/2024			
50.	DDoS	1	02/03/2024			
51.	Firewall Design principles	1	04/03/2024			
52.	Trust Management System	1	05/03/2024			
53.	Introduction to Digital forensics	1	06/03/2024			
54.	Unit 1,2,3,4&5 Overview and Discussion	1	11/03/2024			
55.	Assignment-5	1	13/03/2024			
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):

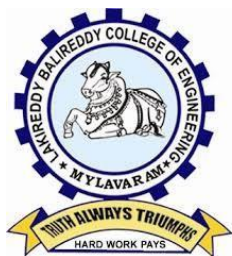
PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching 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	Ethics: Apply ethical principles and commit to professional ethics, responsibilities, and norms of the engineering practice.
PO 9	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society, 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	Ch. Srinivasa Rao	Mr.T.N.V.S.Praveen	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	: 2023-24
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
1.	Lab Cycle-1	3 3	04/12/2023 17/12/2023		DM5	
2.	Lab Cycle -2	3 3	18/12/2023 08/01/2024		DM5	
3.	Lab Cycle-3	3 3	22/01/2024 05/02/2024		DM5	
4.	Lab Cycle-4	3	12/02/2024		DM5	
5.	Lab Cycle-5	3	19/02/2024		DM5	
6.	Lab Cycle-6	3	26/02/2024		DM5	
7.	Lab Cycle-7	3	04/03/2024		DM5	
8.	Lab Cycle-8	3	11/03/2024		DM5	
9.	Lab Cycle-9	3	18/03/2024		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 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
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	Mr.T.N.V.S.Praveen	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: 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 / A

A.Y. : 2023-24

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

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

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

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

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

CO	Program Outcomes (POs)												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2										2	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	05-12-2023		TLM1	CO1	
2.	Compiler Vs Interpreter	1	06-12-2023		TLM1	CO1	
3.	The Phases of Compiler	1	07-12-2023		TLM1	CO1	
4.	The Phases of Compiler	1	09-12-2023		TLM1	CO1	
5.	Compiler Construction Tools	1	12-12-2023		TLM1	CO1	
6.	Boot Strapping Concept	1	13-12-2023		TLM2	CO1	
7.	The Role of Lexical Analyzer	1	14-12-2023		TLM2	CO1	
8.	Input Buffering	1	16-12-2023		TLM2	CO1	
9.	Input Buffering	1	19-12-2023		TLM2	CO1	
10.	Specification of Tokens	1	20-12-2023		TLM2	CO1	
11.	Recognition of Tokens	1	21-12-2023		TLM1	CO1	
12.	A Language for specifying lexical analyzer(LEX)	1	23-12-2023		TLM1	CO1	
13.	Examples on LEX	1	26-12-2023		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	27-12-2023		TLM1	CO2	
2.	Writing a Grammar	1	28-12-2023		TLM1	CO2	
3.	Elimination of left recursion	1	30-12-2023		TLM2	CO2	

4.	Left factoring	1	02-01-2024		TLM1	CO2	
5.	Recursive decent parsing	1	03-01-2024		TLM1	CO2	
6.	Predictive Parsing	1	04-01-2024		TLM1	CO2	
7.	Pre-processing steps required for predictive parsing	1	06-01-2024		TLM2	CO2	
8.	LL(1) Grammar	1	09-01-2024		TLM1	CO2	
9.	Examples on LL(1) Parser	1	10-01-2024		TLM1	CO2	
10.	Error recovery in predictive parsing temple	1	11-01-2024		TLM1	CO2	
11.	Backtracking	1	13-01-2024		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	16-01-2024		TLM1	CO3	
2.	Shift reduce Parsing	1	17-01-2024		TLM1	CO3	
3.	Operator precedence Parsing	1	18-01-2024		TLM1	CO3	
4.	LR Parsers:-SLR parser	1	20-01-2024		TLM1	CO3	
5.	Examples on SLR parser	1	23-01-2024		TLM2	CO3	
6.	CLR parser	1	24-01-2024		TLM1	CO3	
7.	Examples on CLR parser	1	25-01-2024		TLM1	CO3	
8.	LALR parser	1	27-01-2024		TLM1	CO3	
9.	Examples on LALR Parser	1	06-02-2024		TLM2	CO3	
10.	Handling Ambiguous Grammar	1	07-02-2024		TLM2	CO3	
11.	Error recovery in LR parser	1	08-02-2024		TLM2	CO3	
12.	YACC-Automatic parser Generator	1	10-02-2024		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	13-02-2024		TLM1	CO4	
2.	Evaluation order of SDD's & Application of SDD	1	14-02-2024		TLM1	CO4	
3.	Syntax directed Translation schemes & Syntax Tree	1	15-02-2024		TLM1	CO4	
4.	Polish Notation	1	17-02-2024		TLM1	CO4	
5.	Three Address Code	1	20-02-2024		TLM1	CO4	
6.	Static single assignment	1	21-02-2024		TLM1	CO4	
7.	Translation of expressions and control flow statements-Boolean expressions	1	22-02-2024		TLM1	CO4	
8.	Storage Organization	1	24-02-2024		TLM1	CO4	
9.	Storage Allocation Strategies	2	27-02-2024 & 28-02-2024		TLM1	CO4	
10.	Parameter Passing Techniques	2	29-02-2024 & 02-03-2024		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	05-03-2024		TLM1	CO5	
2.	Principle Sources of optimization	2	06-03-2024 & 07-03-2024		TLM1	CO5	
3.	Loop Optimization & Introduction to Data-Flow analysis	2	09-03-2024 & 12-03-2024		TLM1	CO5	
4.	Design issues & Object code forms	1	13-03-2024		TLM1	CO5	
5.	Optimization of Basic Blocks	1	14-03-2024		TLM1	CO5	
6.	DAG Representation of basic blocks	1	16-03-2024		TLM1	CO5	
7.	Code Generation using DAG	1	20-03-2024		TLM1	CO5	
8.	A simple Code	1	22-03-2024		TLM1	CO5	

	Generator						
9.	Peephole Optimization	1	26-03-2024		TLM1	CO5	
10.	Register Allocation and assignment	1	28-04-2024		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 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	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.M.Kiran Kumar	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: Dr.K.Devi Priya

Course Name & Code : BIGDATA ANALYTICS & 20CS19

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

Credits: 3

Program/Sem/Sec : B.Tech/VI/A

A.Y.: 2023-24

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

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	-	-	-	-	-	-	-	-	-	2	-	-	-
CO2	2	-	2	-	-	-	-	-	-	-	-	2	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	04-12-2023		TLM1/TLM2	
2.	Types of Digital Data	1	05-12-2023		TLM1/TLM2	
3.	Classification of Digital Data	1	06-12-2023		TLM1/TLM2	
4.	Characteristics of Data	1	07-12-2023		TLM1/TLM2	
5.	Evolution of Big Data	1	09-12-2023		TLM1/TLM2	
6.	Definition of Big Data, Challenges with Big Data	1	11-12-2023		TLM1/TLM2	
7.	What is Big Data? Other Characteristics of Data Which are not Definitional Traits of Big Data	2	12-12-2023 13-12-2023		TLM1/TLM2	
8.	Why Big Data? analyzing Data with Unix tools	1	14-12-2023		TLM1/TLM2	
9.	Analyzing Data with Hadoop	1	16-12-2023		TLM1/TLM2	
10.	Hadoop Streaming	1	18-12-2023		TLM1/TLM2	
11.	Hadoop Echo System	1	19-12-2023		TLM1/TLM2	
No. of classes required to complete UNIT-I: 12				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	20-12-2023		TLM1/TLM2	
13.	HDFS Concepts	1	21-12-2023		TLM1/TLM2	
14.	Command Line Interface	1	23-12-2023		TLM1/TLM2	
15.	Hadoop file system interfaces	1	26-12-2023		TLM1/TLM2	
16.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	2	27-12-2023 28-12-2023		TLM1/TLM2	
17.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	30-12-2023		TLM1/TLM2	
18.	Hadoop I/O: Compression	1	02-01-2024		TLM1/TLM2	
19.	Serialization	1	03-01-2024		TLM1/TLM2	
20.	Avro and File-Based Data structures	1	04-01-2024		TLM1/TLM2	
21.	Bigdata Applications	2	06-01-2024 08-01-2024		TLM1/TLM2	
22.	Bigdata Analytics Use cases	1	09-01-2024		TLM1/TLM2	
23.	Bigdata Analytics Use cases	1	10-01-2024		TLM1/TLM2	
24.	Bigdata Analytics Challenges	1	11-01-2024		TLM1/TLM2	
No. of classes required to complete UNIT-II: 15				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?	2	19-01-2024 20-01-2024		TLM2/TLM4	
26.	Anatomy of a Map Reduce Job Run	2	22-01-2024 23-01-2024		TLM2/TLM4	
27.	Job Failures	1	24-01-2024		TLM2/TLM4	

28.	Job Scheduling	1	27-01-2024		TLM2/TLM4	
29.	Shuffle and Sort	1	05-02-2024		TLM2/TLM4	
30.	Task Execution	1	06-02-2024		TLM2/TLM4	
31.	Map Reduce Types and Formats	1	07-02-2024		TLM2/TLM4	
32.	Map Reduce Features	1	08-02-2024		TLM2/TLM4	
No. of classes required to complete UNIT-III: 10				No. of classes taken:		

UNIT-IV: Structured Data Processing Tools

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Hive: Installation	1	10-02-2024		TLM2/TLM4	
34.	Running Hive	1	12-02-2024		TLM2/TLM4	
35.	Hive QL	2	15-02-2024 17-02-2024		TLM2/TLM4	
36.	Tables, Querying Data	2	19-02-2024 20-02-2024		TLM2/TLM4	
37.	User Defined functions	1	21-02-2024		TLM2/TLM4	
38.	Sqoop: Introduction	1	23-02-2024		TLM2/TLM4	
39.	generate code	1	24-02-2024		TLM2/TLM4	
40.	Database import	1	26-02-2024		TLM2/TLM4	
41.	working with imported data	1	27-02-2024		TLM2/TLM4	
42.	Importing large objects	1	28-02-2024		TLM2/TLM4	
43.	performing an export	1	29-02-2024		TLM2/TLM4	
44.	Applications	2	02-03-2024 04-03-2024		TLM2/TLM4	
No. of classes required to complete UNIT-IV: 15				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	05-03-2024		TLM2/TLM4	
46.	Execution Modes of Pig	1	07-03-2024		TLM2/TLM4	
47.	Comparison of Pig with Databases	1	11-03-2024		TLM2/TLM4	
48.	Grunt, Pig Latin	2	12-03-2024 13-03-2024		TLM2/TLM4	
49.	User Defined Functions	1	14-03-2024		TLM2/TLM4	
50.	Data Processing operators	1	16-03-2024		TLM2/TLM4	
51.	HBase: Basics	1	18-03-2024		TLM2/TLM4	
52.	Concepts, Clients	1	19-03-2024		TLM2/TLM4	
53.	Example	2	20-03-2024 21-03-2024		TLM2/TLM4	
54.	HBase Versus RDBMS	1	23-03-2024		TLM2/TLM4	
No. of classes required to complete UNIT-V: 12				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.	Spark	2	25-03-2024 26-03-2024		TLM2	

2.	Casandra	2	27-03-2024 28-03-2024		TLM2	
3.	Different tools used in Hadoop	1	30-03-2024		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	Dr. K.Devi Priya	Dr. K.Devi Priya	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: Dr.K.Devi Priya

Course Name & Code : DATA ANALYTICS AND VISUALIZATION LAB & 20CS62

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

Program/Sem/Sec : B.Tech /VI/A A.Y.: 2023-24

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

COURSE EDUCATIONAL OBJECTIVE(CEO):

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

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

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	Refreshing Linux Commands and Installation of Hadoop	3	07-12-2023 14-12-2023		
2.	Implementation of Run a basic Word Count Map Reduce program	3	21-12-2023		
3.	Implementation of Matrix Multiplication with Hadoop Map Reduce	3	28-12-2023		
4.	Implementation of Weather mining by taking weather dataset using Map Reduce	3	04-1-2024		
5.	Installation of Hive along with practice examples	3	11-1-2024		
6.	Installation of Sqoop along with Practice examples	3	18-1-2024		
7.	Downloading and installing Tableau Understanding about importing data, saving, opening, and sharing work books	3	01-02-2024		
8.	Data Preparation with Tableau	3	08-02-2024 15-02-2024		
9.	Charts: Bar Charts, Legends, Filters ,and Hierarchies ,Step Charts, Line Charts	3	22-02-2024		
10.	Maps: Symbol Maps, Filled Maps, Density Maps, Maps with Pie Charts	3	29-02-2024		
11.	Interactive Dash boards	3	07-03-2024		
12.	Interactive Dash boards	3	14-03-2024		
13.	Interactive Dash boards	3	21-03-2024		
14.	Lab Internal Exam	3	28-03-2024		

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	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.K.Devi Priya	Dr.K.Devi Priya	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	: Ch. Nagamani	
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: 2023-24

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

CO1	Identify the basic concepts of Information retrieval system.
CO2	Evaluate the taxonomy of different information retrieval models.
CO3	Demonstrate and evaluate automatic indexing, document & term clustering techniques.
CO4	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	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-
CO2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	2
CO3	2	3	3	2	-	-	-	-	-	-	-	-	-	-	2
CO4	2	3	3	2	-	-	-	-	-	-	-	-	-	-	2
CO5	2	3	3	-	-	-	-	-	-	-	-	-	-	-	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 Kowalski,Gerald,MarkTMaybury,—InformationStorage&RetrievalSystems:Theory and Implementation||, Kluwer Academic Press, 2nd edition, 2002.

REFERENCEBOOKS:

R1 Frakes,W.B.,RicardoBaeza-Yates:InformationRetrievalDataStructuresand Algorithms, Prentice Hall, 1992.

R2 <https://epdf.tips/queue/information-storage-and-retrieval-systems-theory-and-implementationthe-informat.html> Robert Korthagen, John Wiley & Sons, —InformationStorage&Retrieval||.

PART-B**COURSEDELIVERYPLAN(LESSONPLAN):****UNIT-I:Introduction&InformationRetrievalSystemCapabilities**

S.No.	Topicstobe covered	No. of Classes Required	Tentative Date of Completion	Actual Dateof Completion	Teaching Learning Methods	HOD Sign Weekly
1.	UNIT-I: Introduction: Definition	1	04-12-2023		TLM2	
2.	Objectives	1	07-12-2023		TLM2	
3.	Functional Overview ItemNormalization	1	08-12-2023		TLM2	
4.	Selective dissemination AFB	1	09-12-2023		TLM2	
5.	Relationshippto DBMS	1	11-12-2023		TLM2	
6.	Digitallibraries and Data Warehouses	1	14-12-2023		TLM2	
7.	Information Retrieval System Capabilities: Searchcapabilities	2	15-12-2023 16-12-2023		TLM2	
8.	Information RetrievalSystem Capabilities: Browse	1	18-12-2023		TLM2	
9.	Miscellaneous Capabilities	1	21-12-2023		TLM2	
No.ofclassesrequiredtocompleteUNIT-I:10				No.ofclassestaken:		

UNIT-II:DataStructures&CataloguingandIndexing

S.No.	Topicstobe covered	No.of Classes Required	Tentative Date of Completion	Actual Dateof Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction, Stemming Algorithms	2	22-12-2023 23-12-2023		TLM2	
2.	Invertedfile structures	1	28-12-2023		TLM2	
3.	N-gramdata structure	1	29-12-2023		TLM2	
4.	PATdatastructure	1	30-12-2023		TLM2	
5.	Signaturefile structure	1	04-1-2023		TLM2	
6.	Hypertextdata structure	1	05-01-2024		TLM2	
7.	Cataloguingand Indexing :Objectives	1	06-01-2024		TLM2	
8.	IndexingProcess	1	08-01-2024		TLM2	
9.	Automatic Indexing,	1	011-01-2024		TLM2	
10.	Information Extraction	1	17-01-2024		TLM2	
No.ofclassesrequiredtocompleteUNIT-II:11				No.ofclassestaken:		

UNIT-III:AutomaticIndexing,DocumentandTerm Clustering

S.No.	Topicstobe covered	No.of Classes Required	Tentative Date of Completion	Actual Dateof Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Automatic Indexing:Classes of automatic indexing	2	18-01-2024 19-01-2024		TLM2	
2.	Statisticalindexing	1	20-01-2024		TLM2	
3.	Natural language	1	22-01-2024		TLM2	
4.	Concept indexing, Hypertextlinkages.	2	25-01-2024 27-01-2024		TLM2	
IMIDEXAMINATIONSFROM29-02-2024TO03-03-2024						
5.	Documentand TermClustering:	1	05-02-2024		TLM2	

	Introduction					
6.	Thesaurus generation	1	08-02-2024		TLM2	
7.	Itemclustering	2	09-02-2024 12-02-2024		TLM2	
8.	Hierarchyof clusters	2	15-02-2024 16-02-2024		TLM2	
No.ofclassesrequiredtocompleteUNIT-III:12				No.ofclassestaken:		

UNIT-IV:UserSearchTechniques&InformationVisualization

S.No.	Topicstobe covered	No.of Classes Required	Tentative Date of Completion	Actual Dateof Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Searchstatements and binding	2	09-02-2024 13-02-2024		TLM2	
2.	Similarity measuresand ranking	2	14-02-2024 15-02-2024		TLM2	
3.	Relevancefeedback	2	16-02-2024 17-02-2024		TLM2	
4.	Selective dissemination of informationsearch	2	19-02-2024 22-02-2024		TLM2	
5.	Weightedsearches ofBoolean systems	2	23-02-2024 24-02-2024		TLM2	
6.	Searchingthe Internet and hypertext	2	26-02-2024 29-02-2024		TLM2	
7.	Information Visualization	2	01-03-2024 02-03-2024		TLM2	
8.	Introduction: Cognitionand perception	2	04-03-2024 07-03-2024		TLM2	
9.	Information visualization technologies	2	07-03-2024 11-03-2024		TLM2	
No.ofclassesrequiredtocompleteUNIT-IV:18				No.ofclassestaken:		

UNIT-V:TextSearchAlgorithms&InformationSystemEvaluation

S.No.	Topicstobe covered	No. of Classes Required	Tentative Date of Completion	Actual Dateof Completion	Teaching Learning Methods	HOD Sign Weekly
1.	TextSearch Algorithms Introduction,	2	14-03-2024 15-03-2024		TLM2	

	Software text searchalgorithms				
2.	Hardware text searchsystems.	2	16-03-2024 18-03-2024		TLM2
3.	Information System Evaluation: Introduction	2	21-03-2024 22-03-2024		TLM2
4.	Measuresusedin system evaluation,	1	23-03-2024		TLM2
5.	Measurement example-TREC results	1	28-03-2024		TLM2
6.	Revision	1	30-03-2024		TLM2
No.ofclassesrequiredtocompleteUNIT-V:09				No.ofclassestaken:	
IIMIDEXAMINATIONS01-03-2024T006-03-2024					

TeachingLearningMethods			
TLM1	Chalkand Talk	TLM4	Demonstration(Lab/FieldVisit)
TLM2	PPT	TLM5	ICT(NPTEL/Swayam Prabha/MOOCs)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-

EVALUATION PROCESS (R20 Regulations):

EvaluationTask	Marks
Assignment-I(Units-I,II&UNIT-III(HalfoftheSyllabus))	A1=5
I-DescriptiveExamination(Units-I,II&UNIT-III(HalfoftheSyllabus))	M1=15
I-QuizExamination(Units-I,II&UNIT-III(HalfoftheSyllabus))	Q1=10
Assignment-II(Unit-III(RemainingHalfoftheSyllabus),IV&V)	A2=5
II-DescriptiveExamination(UNIT-III(RemainingHalfoftheSyllabus),IV&V)	M2=15
II-QuizExamination(UNIT-III(RemainingHalfoftheSyllabus),IV&V)	Q2=10
MidMarks=80%ofMax((M1+Q1+A1),(M2+Q2+A2))+20%ofMin((M1+Q1+A1),(M2+Q2+A2))	M=30
CumulativeInternalExamination(CIE):M	30
SemesterEndExamination(SEE)	70
TotalMarks=CIE+ SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

P01	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
P02	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.
P03	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.
P04	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.
P05	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
P06	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
P07	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.
P08	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
P09	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
P010	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.
P011	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.
P012	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.

PROGRAMMESPECIFICOUTCOMES(PSOs):

PS01	TheabilitytoapplySoftwareEngineeringpracticesandstrategiesin software project development using open-source programming environment for the success of organization.
PS02	Theabilitytodesignanddevelopcomputerprogramsinnetworking,web applications and IoT as per the society needs.
PS03	Toinculcateanabilitytoanalyze,designandimplementdatabaseapplications.

Course Instructor	Course Coordinator	ModuleCoordinator	HeadoftheDepartment
Ch.Nagamani	Mr P.Veera Swamy	Dr.K.NagaPrasanthi	Dr.D.Veeraiah



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)

L.B. Reddy Nagar, Mylavaram-521230. A.P, INDIA

Affiliated to JNTUK, Kakinada & Approved by AICTE New Delhi

NAAC Accredited New Delhi & Certified by ISO 9001:2015

DEPARTMENT OF CIVIL ENGINEERING

<http://www.lbrce.ac.in>, hodcivil@lbrce.ac.in Ph: 08659-222933, Fax: 08659-222931

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(A/B/C)/VI-Sem., A.Y : 2023-24

PRE-REQUISITE: NIL

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

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

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

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

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

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

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

TEXT BOOKS:

- T1** Tushar Bhattacharya, “Disaster Science and Management”, Tata McGraw Hill Publications, New Delhi, 2012.
T2 R.Subramanian, “Disaster Management”, Vikas Publishing house Pvt. Ltd, 2022.

REFERENCE BOOKS:

- R1** G.K. Ghosh, “Disaster Management”, APH Publishing Corporation, 2006.
R2 U.K. Chakrabarty, “Industrial Disaster Management and Emergency Response”, Asian Books Pvt. Ltd., New Delhi 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT –I: DEFINITIONS & TYPES OF DISASTER

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Disaster Management	1	04.12.2023		TLM2	
2.	Basic definitions	1	05.12.2023		TLM2	
3.	Types of Disasters	1	07.12.2023		TLM2	
4.	Concept of disaster management	1	11.12.2023		TLM2	
5.	Disaster management cycle	1	12.12.2023		TLM2	
6.	Vulnerability	1	14.12.2023		TLM2	
7.	Mitigation	1	16.12.2023		TLM2	
8.	Natural disasters: Drought and cyclone	1	18.12.2023		TLM2	
9.	Natural disasters: Earthquake and landslides	1	19.12.2023		TLM2	
10.	Engineering and technical failure	1	21.12.2023		TLM2	
11.	Nuclear and chemical disaster	1	23.12.2023		TLM2	
12.	Accident-related disasters	1	26.12.2023		TLM2	
13.	HPC on DM in India- DM Act 2005	1	28.12.2023		TLM2	
14.	Revision		30.12.2023		TLM2	
No. of classes required to complete UNIT-I:14				No. of classes taken:		

UNIT-II: IMPACT OF DISASTERS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Impacts due to earthquake and cyclone	1	02.01.2024		TLM2	
2.	Impacts due to landslides and fire hazards	1	04.01.2024		TLM2	
3.	Impacts due to life & live stock and habitation	1	06.01.2024		TLM2	
4.	Agriculture & livelihood loss- health hazards	1	08.01.2024		TLM2	
5.	Malnutrition problems	1	09.01.2024		TLM2	
6.	Contamination of water	1	11.01.2024		TLM2	
7.	Impact on children- environmental loss	1	18.01.2024		TLM2	
8.	Revision		20.01.2024		TLM2	
No. of classes required to complete UNIT-II:07				No. of classes taken:		

UNIT-III: ROLE OF TECHNOLOGY IN DISASTER MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Role of remote sensing	1	22.01.2024		TLM2	
2.	Information system and decision-making tool	1	23.01.2024		TLM2	
3.	DM for infra structure	1	25.01.2024		TLM2	
4.	DM for electrical substances	1	27.01.2024		TLM2	
5.	DM for roads and bridges	1	05.02.2024		TLM2	

6.	Mitigation programme for earthquakes	1	06.02.2024		TLM2
7.	Geospatial information in agriculture drought assessment	1	08.02.2024		TLM2
8.	Multimedia technology in disaster risk management and training	1	12.02.2024		TLM2
9.	Transformable indigenous knowledge in disaster reduction	1	13.02.2024		TLM2
10.	Transformable indigenous knowledge in disaster reduction	1	15.02.2024		TLM2
11.	Revision		17.02.2024		TLM2
No. of classes required to complete UNIT-III:10				No. of classes taken:	

UNIT- IV: PLANNING & RISK PREVENTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	19.02.2024		TLM2	
2.	Planning	1	20.02.2024			
3.	Early warning system	1	22.02.2024		TLM2	
4.	Crisis intervention and management	1	24.02.2024		TLM2	
5.	Response and Rehabilitation after Disasters	1	26.02.2024		TLM2	
6.	Temporary shelter – food and nutrition-safe drinking water	1	27.02.2024		TLM2	
7.	Rehabilitation after cyclones	1	29.02.2024		TLM2	
8.	Response to drought	1	02.03.2024		TLM2	
9.	Response to river erosion	1	04.03.2024		TLM2	
10.	Response after earthquake	1	05.03.2024		TLM2	
11.	Response after Tsunami- Hunger and Disaster	1	07.03.2024		TLM2	
No. of classes required to complete UNIT-IV:10				No. of classes taken:		

UNIT-V: EDUCATION AND COMMUNITY PREPAREDNESS & CASE STUDIES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	11.03.2024		TLM2	
2.	Essentials of disaster education	1	12.03.2024			
3.	School awareness and safety programs, Community based disaster recovery	1	14.03.2024		TLM2	
4.	Voluntary agencies and community participation at various stages of disaster management	1	16.03.2024		TLM2	
5.	Building community capacity for action	1	18.03.2024		TLM2	
6.	Corporate sector and disaster risk reduction	1	19.03.2024		TLM2	
7.	A community focused approach	1	21.03.2024		TLM2	
8.	Case studies on different disasters in the world-1	1	23.03.2024		TLM2	
9.	Case studies on different disasters in the world-2	1	26.03.2024		TLM2	
10.	Case studies on different disasters in	1	28.03.2024		TLM2	

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

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

PART-C

EVALUATION PROCESS (R17 Regulations):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor
(B NARASIMHARAO)

Course Coordinator
(B NARASIMHARAO)

Module Coordinator
(B NARASIMHARAO)

HOD
(Dr.J.V.R)



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

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM	: B.TECH-CSE-VI-Sem-A Sec
ACADEMIC YEAR	: 2023-24
COURSE NAME & CODE	: SERVER-SIDE SCRIPTING LAB & 20CS63
L-T-P STRUCTURE	: 0-0-3
COURSE CREDITS	: 1.5
COURSE INSTRUCTOR	: Mr. MD. Amanatulla

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

C01	Understand the differences between server-side and client-side script, develop simple server-server-side web applications. (Understand - L2)
C02	Identify the importance of AJAX, PHP programming constructs to design server-side web applications. (Remember - L1)
C03	Develop Dynamic Data Driven (Server-side) Web Applications by using AJAX, PHP. (Apply - L3)
C04	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
C01	-	-	2	-	3	-	-	-	-	-	-	1	-	1	3
C02	-	-	2	-	3	-	-	-	-	-	-	1	-	3	-
C03	-	-	2	-	3	-	-	-	-	-	-	1	-	3	-
C04	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
		1 - Low			2 -Medium				3 -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	Teaching Learning Methods	HOD Sign Weekly
1.	MODULE-1	3	05-12-2023 & 12-12-2023		DM5	
2.	MODULE-2	3	19-12-2023 & 26-12-2023		DM5	
3.	MODULE-3	3	02-01-2024 & 09-01-2024		DM5	
4.	MODULE-4	3	16-01-2024		DM5	
5.	MODULE-5	3	23-01-2024 & 06-02-2024		DM5	
6.	MODULE-6	3	13-02-2024		DM5	
7.	MODULE-7	3	20-02-2024		DM5	
8.	MODULE-8	3	27-02-2024 & 05-03-2024		DM5	
9.	MODULE-9	3	12-03-2024		DM5	
10.	MODULE-10	3	19-03-2024		DM5	
11.	INTERNAL EXAM	3	26-03-2024			

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-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

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	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.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. MD. Amanatulla	Mr. MD. Amanatulla	Dr. Y. V. B. Reddy	Dr. D. Veeraiah
Signature				



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

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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 – B	A. Y : 2023 - 2024
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 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.

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	04/12/2023			
2.	Security Attacks	1	05/12/2023			
3.	Security Services, Mechanisms	1	06/12/2023			
4.	Integrity, Authentication Confidentiality & Non-Repudiation	1	07/12/2023			
5.	Substitution Techniques,	1	09/12/2023			
6.	Transposition Techniques	1	11/12/2023			
7.	Block Cipher, Block Cipher	1	12/12/2023			
8.	Fiestal Structure		13/12/2023			
9.	DES, Triple DES Algorithm	1	14/12/2023			
10.	AES Algorithm	1	16/12/2023			
11.	AES Algorithm	1	18/12/2023			
12.	Cipher Block Modes of Operations	1	19/12/2023			
13.	Cipher Block Modes of Operations	1	20/12/2023			
14.	Placement of encryption	1	21/12/2023			
15.	Placement of encryption	1	23/12/2023			
16.	Traffic Analysis	1	25/12/2023			
17.	Traffic Analysis	1	26/12/2023			

18.	Key Distribution	1	27/12/2023			
19.	Key Distribution	1	28/12/2023			
20.	Assignment-1	1	30/12/2023			
No. of classes required to complete UNIT-I		20				

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
21.	Approaches of Message Authentication,	1	01/01/2024			
22.	Hash & MAC functions	1	02/01/2024			
23.	HMAC Algorithm	1	03/01/2024			
24.	Public-Key Encryption Algorithm- RSA	1	04/01/2024			
25.	Diffie –Hellman Key Exchange Algorithm	1	06/01/2024			
26.	SHA-512	1	08/01/2024			
27.	SHA-512	1	09/01/2024			
28.	Digital Signatures	1	10/01/2024			
29.	Digital Signatures	1	11/01/2024			
30.	Public Key Infrastructure, Digital Certificates	1	13/01/2024			
31.	Certificate Authority, Key Management	1	15/01/2024			
32.	Kerberos, X.509 Directory Authentication Service	1	16/01/2024			
33.	Assignment-2	1	17/01/2024			
sNo. of classes required to complete UNIT-II		13				

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
34.	Email privacy, Pretty Good Privacy (PGP)	1	18/01/2024			
35.	PGP Key Management	1	20/01/2024			
36.	MIME and S/ MIME	1	21/01/2024			
37.	IP Security Overview,	1	22/01/2024			

38.	IP Security Architecture,	1	23/01/2024		
39.	Authentication Header Encapsulating Security Payload,	1	24/01/2024		
40.	Authentication Header Encapsulating Security Payload,	1	25/01/2024		
41.	Tunnel and Transport Modes	1	27/01/2024		
42.	Mid exam-1	1	29/01/2024 To 03/02/2024		
43.	Tunnel and Transport Modes	1	05/02/2024		
44.	Combining Security Associations, Key Exchange	1	06/02/2024		
45.	Cryptographic Suites	1	07/02/2024		
46.	Unit Overview and Discussion	1	08/02/2024		
47.	Assignment – 3	1	10/02/2024		
No. of classes required to complete UNIT-III		14		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
48.	Web Security Requirements	1	11/02/2024			
49.	Secure Socket Layer (SSL)Architecture,	1	12/02/2024			
50.	Secure Socket Layer (SSL)Architecture,	1	13/02/2024			
51.	SSL Handshake Protocol	1	14/02/2024			
52.	SSL Handshake Protocol	1	15/02/2024			
53.	Transport Layer Security	1	17/02/2024			
54.	Transport Layer Security	1	19/02/2024			
55.	Secure Electronic Transaction (SET)	1	20/02/2024			
56.	Secure Electronic Transaction (SET)	1	21/02/2024			
57.	Payment Processing	1	22/02/2024			

58.	HTTPs. HTTP vs HTTPs	1	24/02/2024			
59.	Unit Overview and Discussion	1	26/02/2024			
60.	Assignment-4	1	27/02/2024			
No. of classes required to complete UNIT-IV		13		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
61.	Intruder Behaviour Patterns	1	28/02/2024			
62.	Intrusion Techniques	1	29/02/2024			
63.	Honeypot	1	02/03/2024			
64.	Malicious Software	1	04/03/2024			
65.	Viruses and Related Threats	1	05/03/2024			
66.	DDoS	1	06/03/2024			
67.	Firewall Design principles	1	07/03/2024			
68.	Trust Management System	1	09/03/2024			
69.	Introduction to Digital forensics	1	11/03/2024			
70.	Assignment-5	1	12/03/2024			
71.	Unit -1 Overview and Discussion	1	13/03/2024			
72.	Unit -2 Overview and Discussion	1	14/03/2024			
73.	Unit -3 Overview and Discussion	1	18/03/2024			
74.	Unit -4 Overview and Discussion	1	19/03/2024			
75.	Unit -5 Overview and Discussion	1	21/03/2024			
76.	Unit 1,2,3,4&5 Overview and Discussion	1	25/03/2024			
77.	Mid Exam-2	1	28/03/2024			
No. of classes required to complete UNIT-V		17		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	Ethics: Apply ethical principles and commit to professional ethics, responsibilities, and norms of the engineering practice.
PO 9	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society, 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.
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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. D. Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs B.Swathi

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. : 2023-24

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

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

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

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

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

CO	Program Outcomes (POs)												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2										2	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	04-12-2023		TLM1	CO1	
2.	Compiler Vs Interpreter	1	06-12-2023		TLM1	CO1	
3.	The Phases of Compiler	1	08-12-2023		TLM1	CO1	
4.	The Phases of Compiler	1	09-12-2023		TLM1	CO1	
5.	Compiler Construction Tools	1	11-12-2023		TLM1	CO1	
6.	Boot Strapping Concept	1	13-12-2023		TLM2	CO1	
7.	The Role of Lexical Analyzer	1	15-12-2023		TLM2	CO1	
8.	Input Buffering	1	16-12-2023		TLM2	CO1	
9.	Input Buffering	1	18-12-2023		TLM2	CO1	
10.	Specification of Tokens	1	20-12-2023		TLM2	CO1	
11.	Recognition of Tokens	1	22-12-2023		TLM1	CO1	
12.	A Language for specifying lexical analyzer(LEX)	1	23-12-2023		TLM1	CO1	
13.	Examples on LEX	1	27-12-2023		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	29-12-2023		TLM1	CO2	
2.	Writing a Grammar	1	30-12-2023		TLM1	CO2	
3.	Elimination of left recursion	1	03-01-2024		TLM2	CO2	
4.	Left factoring	1	05-01-2024		TLM1	CO2	

5.	Recursive decent parsing	1	06-01-2024		TLM1	CO2	
6.	Predictive Parsing	1	08-01-2024		TLM1	CO2	
7.	Pre-processing steps required for predictive parsing	1	10-01-2024		TLM2	CO2	
8.	LL(1) Grammar	1	12-01-2024		TLM1	CO2	
9.	Examples on LL(1) Parser	1	17-01-2024		TLM1	CO2	
10.	Error recovery in predictive parsing temple	1	19-01-2024		TLM1	CO2	
11.	Backtracking	1	20-01-2024		TLM1	CO2	
No. of classes required to complete UNIT-2		11	No. of classes taken:				

UNIT – III: Bottom-Up parsing

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Handle pruning	1	20-01-2024		TLM1	CO3	
2.	Shift reduce Parsing	1	22-01-2024		TLM1	CO3	
3.	Operator precedence Parsing	1	24-01-2024		TLM1	CO3	
4.	LR Parsers:-SLR parser	1	27-01-2024		TLM1	CO3	
5.	Examples on SLR parser	1	27-01-2024		TLM2	CO3	
6.	CLR parser	1	05-02-2024		TLM1	CO3	
7.	Examples on CLR parser	1	07-02-2024		TLM1	CO3	
8.	LALR parser	1	09-02-2024		TLM1	CO3	
9.	Examples on LALR Parser	1	10-02-2024		TLM2	CO3	
10.	Handling Ambiguous Grammar	1	12-02-2024		TLM2	CO3	
11.	Error recovery in LR parser	1	14-02-2024		TLM2	CO3	
12.	YACC-Automatic parser Generator	1	16-02-2024		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	17-02-2024		TLM1	CO4	
2.	Evaluation order of SDD's & Application of SDD	1	19-02-2024		TLM1	CO4	
3.	Syntax directed Translation schemes & Syntax Tree	1	21-02-2024		TLM1	CO4	
4.	Polish Notation	1	23-02-2024		TLM1	CO4	
5.	Three Address Code	1	24-02-2024		TLM1	CO4	
6.	Static single assignment	1	26-02-2024		TLM1	CO4	
7.	Translation of expressions and control flow statements-Boolean expressions	1	28-02-2024		TLM1	CO4	
8.	Storage Organization	1	01-03-2024		TLM1	CO4	
9.	Storage Allocation Strategies	2	02-03-2024 & 04-03-2024		TLM1	CO4	
10.	Parameter Passing Techniques	2	06-03-2024 & 09-03-2024		TLM1	CO4	
No. of classes required to complete UNIT-4		12	No. of classes taken:				

UNIT-V: Code Optimization & Code Generation

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Basic blocks and flow graphs	1	11-03-2024		TLM1	CO5	
2.	Principle Sources of optimization	2	13-03-2024 & 15-03-2024		TLM1	CO5	
3.	Loop Optimization & Introduction to Data-Flow analysis	2	16-03-2024 & 18-03-2024		TLM1	CO5	
4.	Design issues & Object code forms	1	20-03-2024		TLM1	CO5	
5.	Optimization of Basic Blocks	1	22-03-2024		TLM1	CO5	
6.	DAG Representation of basic blocks	1	23-03-2024		TLM1	CO5	
7.	Code Generation using DAG	1	23-03-2024		TLM1	CO5	
8.	A simple Code Generator	1	27-03-2024		TLM1	CO5	

9.	Peephole Optimization	1	27-03-2024		TLM1	CO5	
10.	Register Allocation and assignment	1	30-03-2024		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 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	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	Mrs.B.Swathi	Dr. D Veeraiah	Dr.D.Venkata Subbaiah	Dr. D Veeraiah
Signature				



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(AUTONOMOUS)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B. TECH-CSE-VI-Sem-B Sec
ACADEMIC YEAR	: 2023-24
COURSE NAME & CODE	: BIG DATA ANALYTICS & 20CS19
L-T-P STRUCTURE	: 3-0-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Mr. P. Nagababu
COURSE COORDINATOR	: Dr.K. Devi Priya

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 Jeffrey David Ullman, "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	04-12-2023		TLM1	CO1	
2.	Evolution of Big Data	2	05-12-2023 & 07-12-2023		TLM1	CO1	
3.	Characteristics of Data	1	08-12-2023		TLM1	CO1	
4.	Types of Digital Data, Classification of Digital Data	2	09-12-2023 & 11-12-2023		TLM1	CO1	
5.	Challenges with Big Data	1	12-12-2023		TLM1	CO1	
6.	Other Characteristics of Data Which are not Definitional Traits of Big Data	2	14-12-2023 & 15-12-2023		TLM1	CO1	
7.	Why Big Data, analyzing Data with Unix tools	2	16-12-2023 & 18-12-2023		TLM1	CO1	
8.	Analyzing Data with Hadoop	2	19-12-2023 & 21-12-2023		TLM1	CO1	
9.	Hadoop Streaming	1	22-12-2023		TLM1	CO1	
10.	Hadoop Echo System	1	23-12-2023		TLM1	CO1	
	No. of classes required to complete UNIT-I	15			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	26-12-2023 & 28-12-2023		TLM1	CO2	
12.	HDFS Concepts	2	29-12-2023 & 30-12-2023		TLM1	CO2	
13.	Command Line Interface	1	02-01-2024		TLM1	CO2	
14.	Hadoop file system interfaces, Data flow	2	04-01-2024 & 05-01-2024		TLM1	CO2	
15.	Data Ingestion with Sqoop and Hadoop archives	2	06-01-2024 & 08-01-2024		TLM1	CO2	
16.	Hadoop I/O: Compression	1	09-01-2024		TLM1	CO2	
17.	Serialization, Avro and File-Based Data structures	2	11-01-2024 & 12-01-2024		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	13-01-2024		TLM1	CO3	
19.	Anatomy of a Map Reduce Job Run	2	08-01-2024 & 09-01-2024		TLM1	CO3	
20.	Failures, Job Scheduling	2	11-01-2024 & 12-01-2024		TLM1	CO3	
21.	Shuffle and Sort, Task Execution	2	13-01-2024 & 18-01-2024		TLM1	CO3	
22.	Map Reduce Types and Formats	2	19-01-2024 & 20-01-2024		TLM1	CO3	
23.	Map Reduce	1	22-01-2024		TLM1	CO3	

	Features.						
24.	Revision of unit-1	1	23-01-2024				
25.	Revision of unit-2	1	27-01-2024				
26.	Mid-I Exams		29-01-2024				
27.	Mid-I Exams		TO 3-02-2024				
	No. of classes required to complete UNIT-III	12				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	05-02-2024 & 06-02-2024		TLM1	CO4	
29.	HiveQL, Tables	2	08-02-2024 & 09-02-2024		TLM1	CO4	
30.	Querying Data	2	12-02-2024 & 13-02-2024		TLM1	CO4	
31.	User Defined functions	1	15-02-2024		TLM1	CO4	
32.	Sqoop: Introduction, generate code	2	16-02-2024 & 17-02-2024		TLM1	CO4	
33.	Database import, working with imported data	2	19-02-2024 & 20-02-2024		TLM1	CO4	
34.	Importing large objects	2	22-02-2024 & 23-02-2024		TLM1	CO4	
35.	performing an exports	2	24-02-2024 & 26-02-2024		TLM1	CO4	
	No. of classes required to complete UNIT-IV	15				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	27-02-2024		TLM1	CO5	
37.	Execution Modes of Pig	2	29-02-2024 & 01-03-2024		TLM1	CO5	
38.	Comparison of Pig with Databases, Grunt	2	02-03-2024 & 04-03-2024		TLM1	CO5	
39.	Pig Latin, User Defined Functions	2	05-03-2024 & 07-03-2024		TLM1	CO5	
40.	Data Processing operators	2	09-03-2024 & 11-03-2024		TLM1	CO5	
41.	HBase: Basics, Concepts	2	12-03-2024 & 14-03-2024		TLM1	CO5	
42.	Clients, Example	1	15-03-2024		TLM1	CO5	
43.	HBase Versus RDBMS	2	16-03-2024 & 18-03-2024		TLM1	CO5	
44.	Revision of unit-V	2	21-03-2024 & 28-03-2024				
45.	Mid-II Exams		01-04-2024 TO 06-04-2024				
	No. of classes required to complete UNIT-V	16			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	22-03-2024		TLM1	CO1	
2.	Avro and File-Based Data structures	1	26-03-2024		TLM1	CO3	
3.	HBase Versus RDBMS..	1	30-03-2024		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	04-12-2023	27-01-2024	8W
I Mid Examinations	29-01-2024	03-02-2024	1W
II Phase of Instructions	05-02-2024	30-03-2024	8W
II Mid Examinations	01-04-2024	06-04-2024	1W
Preparation and Practical's	08-04-2024	13-04-2024	1W
Semester End Examinations	15-04-2024	27-04-2024	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	Dr.K.Devi Priya	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	: P. Mary kamala Kumari
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: 2023-24

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	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-
CO2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	2
CO3	2	3	3	2	-	-	-	-	-	-	-	-	-	-	2
CO4	2	3	3	2	-	-	-	-	-	-	-	-	-	-	2
CO5	2	3	3	-	-	-	-	-	-	-	-	-	-	-	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** 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	05-12-2023		TLM2	
2.	Objectives	1	06-12-2023		TLM2	
3.	Functional Overview Item Normalization	1	07-12-2023		TLM2	
4.	Selective dissemination AFB	1	08-12-2023		TLM2	
5.	Relationship to DBMS	1	12-12-2023		TLM2	
6.	Digital libraries and Data Warehouses	1	13-12-2023		TLM2	
7.	Information Retrieval System Capabilities: Search capabilities	2	14-12-2023 15-12-2023		TLM2	
8.	Information Retrieval System Capabilities: Browse	1	19-12-2023		TLM2	
9.	Miscellaneous Capabilities	1	20-12-2023		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	21-12-2023 22-12-2023		TLM2	
2.	Inverted file structures	1	26-12-2023		TLM2	
3.	N-gram data structure	1	27-12-2023		TLM2	
4.	PAT data structure	1	28-12-2023		TLM2	
5.	Signature file structure	1	29-12-2023		TLM2	
6.	Hypertext data structure	1	02-01-2024		TLM2	
7.	Cataloguing and Indexing :Objectives	1	02-01-2024		TLM2	
8.	Indexing Process	1	03-01-2024		TLM2	
9.	Automatic Indexing,	1	04-01-2024		TLM2	
10.	Information Extraction	1	05-01-2024		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	09-01-2024 10-01-2024		TLM2	
2.	Statistical indexing	1	11-01-2024		TLM2	
3.	Natural language	1	17-01-2024		TLM2	
4.	Concept indexing, Hypertext linkages.	1	18-01-2024		TLM2	
I MID EXAMINATIONS FROM 29-02-2024 TO 03-03-2024						
5.	Document and Term Clustering:	1	19-01-2024		TLM2	

	Introduction					
6.	Thesaurus generation	1	24-01-2024		TLM2	
7.	Item clustering	2	25-01-2024 06-02-2024		TLM2	
8.	Hierarchy of clusters	2	07-02-2024 08-02-2024		TLM2	
No. of classes required to complete UNIT-III:11				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	2	09-02-2024 13-02-2024		TLM2	
2.	Similarity measures and ranking	2	14-02-2024 15-02-2024		TLM2	
3.	Relevance feedback	2	16-02-2024 20-02-2024		TLM2	
4.	Selective dissemination of information search	2	21-02-2024 22-02-2024		TLM2	
5.	Weighted searches of Boolean systems	2	23-02-2024 27-02-2024		TLM2	
6.	Searching the Internet and hypertext	2	28-02-2024 29-02-2024		TLM2	
7.	Information Visualization	2	28-02-2024 01-03-2024		TLM2	
8.	Introduction: Cognition and perception	2	05-03-2024 06-03-2024		TLM2	
9.	Information visualization technologies	2	07-03-2024 12-03-2024		TLM2	
No. of classes required to complete UNIT-IV:18				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 Introduction,	2	13-03-2024 14-03-2024		TLM2	

	Software text search algorithms				
2.	Hardware text search systems.	2	15-03-2024 19-03-2024		TLM2
3.	Information System Evaluation: Introduction	2	20-03-2024 21-03-2024		TLM2
4.	Measures used in system evaluation,	2	22-03-2024 26-03-2024		TLM2
5.	Measurement example – TREC results	2	27-03-2024		TLM2
6.	Revision	1	28-03-2024		TLM2
No. of classes required to complete UNIT-V:11				No. of classes taken:	
II MID EXAMINATIONS 01-03-2024 TO 06-03-2024					

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	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.

Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Ms P. Mary kamala Kumari	Mr P.Veera Swamy	Dr.K.Naga Prasanthi	Dr.D.Veeraiah



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)

L.B. Reddy Nagar, Mylavaram-521230. A.P, INDIA

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NAAC Accredited New Delhi & Certified by ISO 9001:2015

DEPARTMENT OF CIVIL ENGINEERING

<http://www.lbrce.ac.in>, hodcivil@lbrce.ac.in Ph: 08659-222933, Fax: 08659-222931

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(A/B/C)/VI-Sem., A.Y : 2023-24

PRE-REQUISITE: NIL

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

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

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

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

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

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

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

TEXT BOOKS:

- T1** Tushar Bhattacharya, “Disaster Science and Management”, Tata McGraw Hill Publications, New Delhi, 2012.
T2 R.Subramanian, “Disaster Management”, Vikas Publishing house Pvt. Ltd, 2022.

REFERENCE BOOKS:

- R1** G.K. Ghosh, “Disaster Management”, APH Publishing Corporation, 2006.
R2 U.K. Chakrabarty, “Industrial Disaster Management and Emergency Response”, Asian Books Pvt. Ltd., New Delhi 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT –I: DEFINITIONS & TYPES OF DISASTER

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Disaster Management	1	04.12.2023		TLM2	
2.	Basic definitions	1	05.12.2023		TLM2	
3.	Types of Disasters	1	07.12.2023		TLM2	
4.	Concept of disaster management	1	11.12.2023		TLM2	
5.	Disaster management cycle	1	12.12.2023		TLM2	
6.	Vulnerability	1	14.12.2023		TLM2	
7.	Mitigation	1	16.12.2023		TLM2	
8.	Natural disasters: Drought and cyclone	1	18.12.2023		TLM2	
9.	Natural disasters: Earthquake and landslides	1	19.12.2023		TLM2	
10.	Engineering and technical failure	1	21.12.2023		TLM2	
11.	Nuclear and chemical disaster	1	23.12.2023		TLM2	
12.	Accident-related disasters	1	26.12.2023		TLM2	
13.	HPC on DM in India- DM Act 2005	1	28.12.2023		TLM2	
14.	Revision		30.12.2023		TLM2	
No. of classes required to complete UNIT-I:14				No. of classes taken:		

UNIT-II: IMPACT OF DISASTERS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Impacts due to earthquake and cyclone	1	02.01.2024		TLM2	
2.	Impacts due to landslides and fire hazards	1	04.01.2024		TLM2	
3.	Impacts due to life & live stock and habitation	1	06.01.2024		TLM2	
4.	Agriculture & livelihood loss- health hazards	1	08.01.2024		TLM2	
5.	Malnutrition problems	1	09.01.2024		TLM2	
6.	Contamination of water	1	11.01.2024		TLM2	
7.	Impact on children- environmental loss	1	18.01.2024		TLM2	
8.	Revision		20.01.2024		TLM2	
No. of classes required to complete UNIT-II:07				No. of classes taken:		

UNIT-III: ROLE OF TECHNOLOGY IN DISASTER MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Role of remote sensing	1	22.01.2024		TLM2	
2.	Information system and decision-making tool	1	23.01.2024		TLM2	
3.	DM for infra structure	1	25.01.2024		TLM2	
4.	DM for electrical substances	1	27.01.2024		TLM2	
5.	DM for roads and bridges	1	05.02.2024		TLM2	

6.	Mitigation programme for earthquakes	1	06.02.2024		TLM2
7.	Geospatial information in agriculture drought assessment	1	08.02.2024		TLM2
8.	Multimedia technology in disaster risk management and training	1	12.02.2024		TLM2
9.	Transformable indigenous knowledge in disaster reduction	1	13.02.2024		TLM2
10.	Transformable indigenous knowledge in disaster reduction	1	15.02.2024		TLM2
11.	Revision		17.02.2024		TLM2
No. of classes required to complete UNIT-III:10				No. of classes taken:	

UNIT- IV: PLANNING & RISK PREVENTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	19.02.2024		TLM2	
2.	Planning	1	20.02.2024			
3.	Early warning system	1	22.02.2024		TLM2	
4.	Crisis intervention and management	1	24.02.2024		TLM2	
5.	Response and Rehabilitation after Disasters	1	26.02.2024		TLM2	
6.	Temporary shelter – food and nutrition-safe drinking water	1	27.02.2024		TLM2	
7.	Rehabilitation after cyclones	1	29.02.2024		TLM2	
8.	Response to drought	1	02.03.2024		TLM2	
9.	Response to river erosion	1	04.03.2024		TLM2	
10.	Response after earthquake	1	05.03.2024		TLM2	
11.	Response after Tsunami- Hunger and Disaster	1	07.03.2024		TLM2	
No. of classes required to complete UNIT-IV:10				No. of classes taken:		

UNIT-V: EDUCATION AND COMMUNITY PREPAREDNESS & CASE STUDIES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	11.03.2024		TLM2	
2.	Essentials of disaster education	1	12.03.2024			
3.	School awareness and safety programs, Community based disaster recovery	1	14.03.2024		TLM2	
4.	Voluntary agencies and community participation at various stages of disaster management	1	16.03.2024		TLM2	
5.	Building community capacity for action	1	18.03.2024		TLM2	
6.	Corporate sector and disaster risk reduction	1	19.03.2024		TLM2	
7.	A community focused approach	1	21.03.2024		TLM2	
8.	Case studies on different disasters in the world-1	1	23.03.2024		TLM2	
9.	Case studies on different disasters in the world-2	1	26.03.2024		TLM2	
10.	Case studies on different disasters in	1	28.03.2024		TLM2	

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

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

PART-C

EVALUATION PROCESS (R17 Regulations):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor
(B NARASIMHARAO)

Course Coordinator
(B NARASIMHARAO)

Module Coordinator
(B NARASIMHARAO)

HOD
(Dr.J.V.R)



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech. VI-Sem., CSE/B-sec
ACADEMIC YEAR : 2023-24
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	08/12/2023 15/12/2023		DM5	
	Lab cycle-2	3 3	22/12/2023 29/12/2023		DM5	
	Lab cycle-3	3 3	05/01/2024 12/01/2024		DM5	
	Lab cycle-4	3 3	19/01/2024 26/01/2024		DM5	
	Mid Exam-1		29/01/2024 To 03/02/2024			
	Lab cycle-5	3 3	09/02/2024 16/02/2024		DM5	
	Lab cycle-6	3 3	23/02/2024 01/03/2024		DM5	
	Lab cycle-7	3	08/03/2024		DM5	
	Lab cycle-8	3	15/03/2024		DM5	
	Lab cycle-9	3	22/03/2024		DM5	
	Lab Internal Examination	3	29/03/2024		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	A.Gopi Suresh			Dr. D. Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM	: B.TECH-CSE-VI-Sem-B Sec
ACADEMIC YEAR	: 2023-24
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	: Dr.K.Devi Priya

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

C01	Demonstrate the installation of Big data analytic tools. (Understand – L2)
C02	Apply data modelling techniques to large data sets. (Apply – L3)
C03	Conduct exploratory data analysis using visualization. (Understand – L2)
C04	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
C01	2	1	-	2	2	-	-	-	-	-	-	1	-	-	-
C02	2	-	-	3	-	-	-	-	-	-	-	1	-	-	-
C03	2	1	-	2	2	-				-	-	1	-	-	-
C04	-	-	-	-	-	-	-	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 Jeffrey 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	07-12-2023		DM5	
2.	EXPERIMENT-2	3	14-12-2023 &21-12-2023		DM5	
3.	EXPERIMENT-3	3	28-12-2023 & 04-01-2024		DM5	
4.	EXPERIMENT-4	3	11-01-2024		DM5	
5.	EXPERIMENT-5	3	18-01-2023		DM5	
6.	EXPERIMENT-6	3	25-01-2024		DM5	
7.	EXPERIMENT-7	3	01-02-2024 &08-02-2024		DM5	
8.	EXPERIMENT-8	3	15-02-2024 &22-02-2024		DM5	
9.	EXPERIMENT-9	3	29-02-2024		DM5	
10.	EXPERIMENT-10	3	07-03-2024		DM5	
11.	EXPERIMENT-11	3	14-03-2024 &28-03-2024		DM5	
12.	INTERNAL EXAM	3	28-03-2024			

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 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.K.Devi Priya	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-B-Sec
ACADEMIC YEAR	: 2023-24
COURSE NAME & CODE	: SERVER SIDE SCRIPTING LAB & 20CS63
L-T-P STRUCTURE	: 0-0-3
COURSE CREDITS	: 1.5
COURSE INSTRUCTOR	: Mr. P.Somaraju
COURSE COORDINATOR	: Mr.Md.Amanatulla

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						

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	04-12-2023 & 11-12-2023		DM5	
2.	MODULE-2	3	18-12-2023 & 25-12-2023		DM5	
3.	MODULE-3	3	01-01-2024 & 08-01-2024		DM5	
4.	MODULE-4	3	15-01-2024		DM5	
5.	MODULE-5	3	22-01-2024 & 05-02-2024		DM5	
6.	MODULE-6	3	12-02-2024		DM5	
7.	MODULE-7	3	19-02-2024		DM5	
8.	MODULE-8	3	26-02-2024 & 04-03-2024		DM5	
9.	MODULE-9	3	11-03-2024		DM5	
10.	MODULE-10	3	18-03-2024		DM5	
11.	INTERNAL EXAM	3	25-03-2024			

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-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

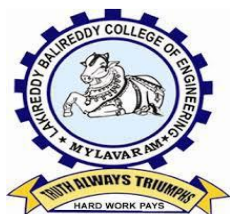
PROGRAMME OUTCOMES (POs):

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	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.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. P.Somaraju	Mr.Md.Amanatulla	Dr. Y. V. B. Reddy	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	: INFORMATION SECURITY (20CS17)	
L-T-P Structure	: 3-0-0	Credits : 3
Program/Sem/Sec	: B.Tech., CSE, VI-Sem., Section – C	A. Y : 2023 - 2024
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 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.

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	05/12/2023			
2.	Security Attacks	1	06/12/2023			
3.	Security Services, Mechanisms	1	07/12/2023			
4.	Integrity, Authentication Confidentiality & Non-Repudiation	1	08/12/2023			
5.	Substitution Techniques,	1	09/12/2023			
6.	Transposition Techniques	1	12/12/2023			
7.	Block Cipher, Block Cipher	1	13/12/2023			
8.	Fiestal Structure		14/12/2023			
9.	DES, Triple DES Algorithm	1	15/12/2023			
10.	AES Algorithm	1	16/12/2023			
11.	Cipher Block Modes of Operations	1	19/12/2023			
12.	Placement of encryption	1	20/12/2023			
13.	Traffic Analysis	1	21/12/2023			
14.	Key Distribution	1	22/12/2023			
15.	Assignment-1	1	23/12/2023			
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	26/12/2023			
17.	Hash & MAC functions	1	27/12/2023			
18.	HMAC Algorithm	1	28/12/2023			
19.	Public-Key Encryption Algorithm- RSA	1	29/12/2023			
20.	Diffie –Hellman Key Exchange Algorithm	1	30/12/2023			
21.	SHA-512	1	02/01/2024			
22.	Digital Signatures	1	03/01/2024			
23.	Public Key Infrastructure, Digital Certificates	1	04/01/2024			
24.	Certificate Authority, Key Management	1	05/01/2024			
25.	Kerberos, X.509 Directory Authentication Service	1	06/01/2024			
26.	Assignment-2	1	09/01/2024			
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	10/01/2024			
28.	PGP Key Management	1	11/01/2024			
29.	MIME and S/ MIME	1	12/01/2024			
30.	IP Security Overview, IP Security Architecture,	1	16/01/2024			
31.	Authentication Header Encapsulating Security Payload,	1	18/01/2024			
32.	Tunnel and Transport Modes	1	19/01/2024			
33.	Combining Security Associations, Key Exchange	1	20/01/2024			
34.	Cryptographic Suites	1	23/01/2024			
35.	Unit Overview and Discussion	1	24/01/2024			
36.	Assignment - 3	1	25/01/2024			
No. of classes required to complete		10		No. of classes taken:		

UNIT-III			
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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	06/02/2024			
38.	Secure Socket Layer (SSL)Architecture,	1	07/02/2024			
39.	SSL Handshake Protocol	1	08/02/2024			
40.	Transport Layer Security	1	10/02/2024			
41.	Secure Electronic Transaction (SET)	2	13/02/2024 14/02/2024			
42.	Payment Processing	1	16/02/2024			
43.	HTTPs. HTTP vs HTTPs	1	20/02/2024			
44.	Unit Overview and Discussion	1	22/02/2024			
No. of classes required to complete UNIT-IV		09		No. of classes taken:		

UNIT-V: INTRUDERS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
45.	Intruder Behaviour Patterns	1	27/02/2024			
46.	Intrusion Techniques	1	29/02/2024			
47.	Honeybot	1	05/03/2024			
48.	Malicious Software	1	07/03/2024			
49.	Viruses and Related Threats	2	09/03/2024 12/03/2024			
50.	DDoS	1	15/03/2024			
51.	Firewall Design principles	2	19/03/2024 20/03/2024			
52.	Trust Management System	2	22/03/2024			

			23/03/2024			
53.	Introduction to Digital forensics	1	26/03/2024			
54.	Unit 1,2,3,4&5 Overview and Discussion	2	26/03/2024 27/03/2024			
55.	Assignment-5	2	29/03/2024 30/03/2024			
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):

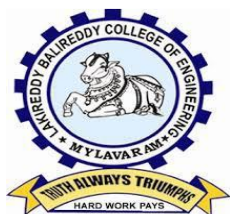
PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching 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	Ethics: Apply ethical principles and commit to professional ethics, responsibilities, and norms of the engineering practice.
PO 9	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society, 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				
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B.Tech. IV-Sem., CSE-C		
ACADEMIC YEAR	: 2023-24		
COURSE NAME & CODE	: INFORMATION SECURITY LAB & 20CS61		
L-T-P STRUCTURE	: 0-0-3	COURSE CREDITS	: 1.5
COURSE INSTRUCTOR	: T N V S Praveen		

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	05/12/2023 12/12/2023		DM5	
2.	Lab Cycle -2	3 3	19/12/2023 26/12/2023		DM5	
3.	Lab Cycle-3	3 3	02/01/2024 23/01/2024		DM5	
4.	Lab Cycle-4	3	06/02/2024		DM5	
5.	Lab Cycle-5	3	13/02/2024		DM5	
6.	Lab Cycle-6	3	27/02/2024		DM5	
7.	Lab Cycle-7	3	05/03/2024		DM5	
8.	Lab Cycle-8	3	17/03/2024		DM5	
9.	Lab Cycle-9	3	26/03/2024		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				
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. D.Veeraiah

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. : 2023-24

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

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

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

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

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

CO	Program Outcomes (POs)												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2										2	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	04-12-2023		TLM1	CO1	
2.	Compiler Vs Interpreter	1	06-12-2023		TLM1	CO1	
3.	The Phases of Compiler	1	08-12-2023		TLM1	CO1	
4.	The Phases of Compiler	1	09-12-2023		TLM1	CO1	
5.	Compiler Construction Tools	1	11-12-2023		TLM1	CO1	
6.	Boot Strapping	1	13-12-2023		TLM2	CO1	
7.	The Role of Lexical Analyzer	1	15-12-2023		TLM2	CO1	
8.	Input Buffering	1	16-12-2023		TLM2	CO1	
9.	Specification of Tokens	1	18-12-2023		TLM2	CO1	
10.	Recognition of Tokens	1	20-12-2023		TLM1	CO1	
11.	A Language for Specifying lexical analyzer(LEX)	1	22-12-2023		TLM1	CO1	
12.	Examples on LEX	1	23-12-2023		TLM1	CO1	
No. of classes required to complete UNIT-I		12	No. of classes taken:				

UNIT-II: Syntax Analyzer & TOP Down Parsing

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	The Role of parser	1	27-12-2023		TLM1	CO2	
2.	Writing a Grammar	1	29-12-2023		TLM1	CO2	
3.	Elimination of left recursion	1	30-12-2023		TLM2	CO2	
4.	Left factoring	1	03-01-2024		TLM1	CO2	

5.	Recursive decent parsing	1	05-01-2024		TLM1	CO2	
6.	Predictive Parsing	1	06-01-2024		TLM1	CO2	
7.	Pre-processing steps required for predictive parsing	1	08-01-2024		TLM2	CO2	
8.	LL(1) Grammar	1	10-01-2024		TLM1	CO2	
9.	Examples on LL(1) Parser	1	12-01-2024		TLM1	CO2	
10.	Error recovery in predictive parsing temple	1	13-01-2024		TLM1	CO2	
11.	Backtracking	1	19-01-2024		TLM1	CO2	
No. of classes required to complete UNIT-2		11	No. of classes taken:				

UNIT – III: Bottom-Up parsing

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Handle pruning	1	20-01-2024		TLM1	CO3	
2.	Shift reduce Parsing	1	22-01-2024		TLM1	CO3	
3.	Operator precedence Parsing	1	24-01-2024		TLM1	CO3	
4.	LR Paresers-SLR parser	1	27-01-2024		TLM1	CO3	
5.	Examples on SLR parser	1	05-02-2024		TLM2	CO3	
6.	CLR parser	1	07-02-2024		TLM1	CO3	
7.	Examples on CLR parser	1	09-02-2024		TLM1	CO3	
8.	LALR parser	1	10-02-2024		TLM1	CO3	
9.	Examples on LALR Parser	1	12-02-2024		TLM2	CO3	
10.	Handling Ambiguous Grammar	1	14-02-2024		TLM2	CO3	
11.	Error recovery in LR parser	1	16-02-2024		TLM2	CO3	
12.	YACC-Automatic parser Generator	1	17-02-2024		TLM2	CO3	
No. of classes required to complete UNIT-3		12	No. of classes taken:				

UNIT-IV: Syntax Directed Translation & Intermediate Code Generation

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Syntax directed definitions	1	19-02-2024		TLM1	CO4	
2.	Evaluation order of SDD's & Applications of SDD	1	21-02-2024		TLM1	CO4	
3.	Syntax directed Translation schemes, Syntax Tree	1	23-02-2024		TLM1	CO4	
4.	Polish Notation	1	24-02-2024		TLM1	CO4	
5.	Three Address Code	1	26-02-2024		TLM1	CO4	
6.	Static single assignment	1	28-02-2024		TLM1	CO4	
7.	Translation of expressions and control flow statements-Boolean expressions	1	01-03-2024		TLM1	CO4	
8.	Storage organization	1	02-03-2024		TLM1	CO4	
9.	Storage allocation strategies	1	04-03-2024		TLM1	CO4	
10.	Parameter passing techniques	1	06-03-2024		TLM1	CO4	
No. of classes required to complete UNIT-4		10	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	09-03-2024		TLM1	CO5	
2.	Principle Sources of optimization	2	11-03-2024 & 13-03-2024		TLM1	CO5	
3.	Loop Optimization & Introduction to Data-Flow Analysis	2	15-03-2024 & 16-03-2024		TLM1	CO5	
4.	Design issues & Object code forms	1	18-03-2024		TLM1	CO5	
5.	Optimization of Basic Blocks	1	20-03-2024		TLM1	CO5	
6.	DAG Representation of basic blocks	1	21-03-2024		TLM1	CO5	
7.	Code Generation using DAG	1	22-03-2024		TLM1	CO5	
8.	A simple Code Generator	1	23-03-2024		TLM1	CO5	

9.	Peephole Optimization	1	27-03-2024		TLM1	CO5	
10.	Register Allocation and assignment	1	30-03-2024		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 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	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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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.

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

Program/Sem/Sec : B.Tech/VI/A

Credits: 3

A.Y.: 2023-24

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

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	-	-	-	-	-	-	-	-	-	2	-	-	-
CO2	2	-	2	-	-	-	-	-	-	-	-	2	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	04-12-2023		TLM1/TLM2	
2.	Types of Digital Data	1	05-12-2023		TLM1/TLM2	
3.	Classification of Digital Data	1	07-12-2023		TLM1/TLM2	
4.	Characteristics of Data	1	08-12-2023		TLM1/TLM2	
5.	Evolution of Big Data	1	09-12-2023		TLM1/TLM2	
6.	Definition of Big Data, Challenges with Big Data	1	11-12-2023		TLM1/TLM2	
7.	What is Big Data? Other Characteristics of Data Which are not Definitional Traits of Big Data	2	12-12-2023 14-12-2023		TLM1/TLM2	
8.	Why Big Data? analyzing Data with Unix tools	1	15-12-2023		TLM1/TLM2	
9.	Analyzing Data with Hadoop	1	16-12-2023		TLM1/TLM2	
10.	Hadoop Streaming	1	18-12-2023		TLM1/TLM2	
11.	Hadoop Echo System	1	19-12-2023		TLM1/TLM2	
No. of classes required to complete UNIT-I: 12				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	21-12-2023		TLM1/TLM2	
13.	HDFS Concepts	1	22-12-2023		TLM1/TLM2	
14.	Command Line Interface	1	23-12-2023		TLM1/TLM2	
15.	Hadoop file system interfaces	1	26-12-2023		TLM1/TLM2	
16.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	2	28-12-2023 29-12-2023		TLM1/TLM2	
17.	Dataflow, Data Ingestion with Sqoop and Hadoop archives,	1	30-12-2023		TLM1/TLM2	
18.	Hadoop I/O: Compression	1	02-01-2024		TLM1/TLM2	
19.	Serialization	1	04-01-2024		TLM1/TLM2	
20.	Avro and File-Based Data structures	1	05-01-2024		TLM1/TLM2	
21.	Bigdata Applications	2	06-01-2024 08-01-2024		TLM1/TLM2	
22.	Bigdata Analytics Use cases	1	09-01-2024		TLM1/TLM2	
23.	Bigdata Analytics Use cases	1	11-01-2024		TLM1/TLM2	
24.	Bigdata Analytics Challenges	1	12-01-2024		TLM1/TLM2	
No. of classes required to complete UNIT-II: 15				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?	2	19-01-2024 20-01-2024		TLM2/TLM4	
26.	Anatomy of a Map Reduce Job Run	2	22-01-2024 23-01-2024		TLM2/TLM4	
27.	Job Failures	1	25-01-2024		TLM2/TLM4	
28.	Job Scheduling	1	27-01-2024		TLM2/TLM4	

29.	Shuffle and Sort	1	05-02-2024		TLM2/TLM4
30.	Task Execution	1	06-02-2024		TLM2/TLM4
31.	Map Reduce Types and Formats	1	08-02-2024		TLM2/TLM4
32.	Map Reduce Features	1	09-02-2024		TLM2/TLM4
No. of classes required to complete UNIT-III: 10				No. of classes taken:	

UNIT-IV: Structured Data Processing Tools

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Hive: Installation	1	12-02-2024		TLM2/TLM4	
34.	Running Hive	1	15-02-2024		TLM2/TLM4	
35.	Hive QL	2	16-02-2024 17-02-2024		TLM2/TLM4	
36.	Tables, Querying Data	2	19-02-2024 20-02-2024		TLM2/TLM4	
37.	User Defined functions	1	22-02-2024		TLM2/TLM4	
38.	Sqoop: Introduction	1	23-02-2024		TLM2/TLM4	
39.	generate code	1	24-02-2024		TLM2/TLM4	
40.	Database import	1	26-02-2024		TLM2/TLM4	
41.	working with imported data	1	27-02-2024		TLM2/TLM4	
42.	Importing large objects	1	29-02-2024		TLM2/TLM4	
43.	performing an export	1	01-03-2024		TLM2/TLM4	
44.	Applications	2	02-03-2024 04-03-2024		TLM2/TLM4	
No. of classes required to complete UNIT-IV: 15				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	05-03-2024		TLM2/TLM4	
46.	Execution Modes of Pig	1	07-03-2024		TLM2/TLM4	
47.	Comparison of Pig with Databases	1	11-03-2024		TLM2/TLM4	
48.	Grunt, Pig Latin	2	12-03-2024 14-03-2024		TLM2/TLM4	
49.	User Defined Functions	1	15-03-2024		TLM2/TLM4	
50.	Data Processing operators	1	16-03-2024		TLM2/TLM4	
51.	HBase: Basics	1	18-03-2024		TLM2/TLM4	
52.	Concepts, Clients	1	19-03-2024		TLM2/TLM4	
53.	Example	2	21-03-2024 22-03-2024		TLM2/TLM4	
54.	HBase Versus RDBMS	1	23-03-2024		TLM2/TLM4	
No. of classes required to complete UNIT-V: 12				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.	Spark	2	25-03-2024 26-03-2024		TLM2	

2.	Casandra	2	28-03-2024 29-03-2024		TLM2	
3.	Different tools used in Hadoop	1	30-03-2023		TLM2	
					No. of classes taken:	

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	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	Dr. K. Devi Priya	Dr. K Naga Prasanthi	Dr. D.Veeraiah
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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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-C	A.Y: 2023-24	

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	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-
CO2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	2
CO3	2	3	3	2	-	-	-	-	-	-	-	-	-	-	2
CO4	2	3	3	2	-	-	-	-	-	-	-	-	-	-	2
CO5	2	3	3	-	-	-	-	-	-	-	-	-	-	-	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 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	04-12-2023		TLM2	
2.	Objectives	1	05-12-2023		TLM2	
3.	Functional Overview Item Normalization	1	07-12-2023		TLM2	
4.	Selective dissemination AFB	1	09-12-2023		TLM2	
5.	Relationship to DBMS	1	11-12-2023		TLM2	
6.	Digital libraries and Data Warehouses	1	12-12-2023		TLM2	
7.	Information Retrieval System Capabilities: Search capabilities	2	14-12-2023 16-12-2023		TLM2	
8.	Information Retrieval System Capabilities: Browse	1	18-12-2023		TLM2	
9.	Miscellaneous Capabilities	1	19-12-2023		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	21-12-2023 23-12-2023		TLM2	
2.	Inverted file structures	1	26-12-2023		TLM2	
3.	N-gram data structure	1	28-12-2023		TLM2	
4.	PAT data structure	1	30-12-2023		TLM2	
5.	Signature file structure	1	02-01-2024		TLM2	
6.	Hypertext data structure	1	04-01-2024		TLM2	
7.	Cataloguing and Indexing :Objectives	1	06-01-2024		TLM2	
8.	Indexing Process	1	08-01-2024		TLM2	
9.	Automatic Indexing,	1	09-01-2024		TLM2	
10.	Information Extraction	1	11-01-2024		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	18-01-2024 20-01-2024		TLM2	
2.	Statistical indexing	1	23-01-2024		TLM2	
3.	Natural language	1	25-01-2024		TLM2	
4.	Concept indexing, Hypertext linkages.	1	27-01-2024		TLM2	
I MID EXAMINATIONS FROM 29-01-2024 TO 03-02-2024						

5.	Document and Term Clustering: Introduction	1	05-02-2024		TLM2	
6.	Thesaurus generation	1	06-02-2024		TLM2	
7.	Item clustering	2	08-02-2024 12-02-2024		TLM2	
8.	Hierarchy of clusters	1	13-02-2024		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	15-02-2024		TLM2	
2.	Similarity measures and ranking	2	17-02-2024 20-02-2024		TLM2	
3.	Relevance feedback	1	22-02-2024		TLM2	
4.	Selective dissemination of information search	2	24-02-2024 26-02-2024		TLM2	
5.	Weighted searches of Boolean systems	1	27-02-2024		TLM2	
6.	Searching the Internet and hypertext	1	29-02-2024		TLM2	
7.	Information Visualization	1	02-03-2024		TLM2	
8.	Introduction: Cognition and perception	1	04-03-2024		TLM2	
9.	Information visualization technologies	2	05-03-2024 07-03-2024		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	11-03-2024 12-03-2024		TLM2	

	Introduction, Software text search algorithms				
2.	Hardware text search systems.	2	14-03-2024 16-03-2024		TLM2
3.	Information System Evaluation: Introduction	1	18-03-2024		TLM2
4.	Measures used in system evaluation,	1	21-03-2024		TLM2
5.	Measurement example – TREC results	2	23-03-2024 26-03-2024		TLM2
6.	Revision	1	28-03-2024		TLM2
No. of classes required to complete UNIT-V:09				No. of classes taken:	
II MID EXAMINATIONS 01-04-2024 TO 06-04-2024					

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	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.

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



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)

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NAAC Accredited New Delhi & Certified by ISO 9001:2015

DEPARTMENT OF CIVIL ENGINEERING

<http://www.lbrce.ac.in>, hodcivil@lbrce.ac.in Ph: 08659-222933, Fax: 08659-222931

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(A/B/C)/VI-Sem., A.Y : 2023-24

PRE-REQUISITE: NIL

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

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

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

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

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

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

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

TEXT BOOKS:

- T1** Tushar Bhattacharya, “Disaster Science and Management”, Tata McGraw Hill Publications, New Delhi, 2012.
T2 R.Subramanian, “Disaster Management”, Vikas Publishing house Pvt. Ltd, 2022.

REFERENCE BOOKS:

- R1** G.K. Ghosh, “Disaster Management”, APH Publishing Corporation, 2006.
R2 U.K. Chakrabarty, “Industrial Disaster Management and Emergency Response”, Asian Books Pvt. Ltd., New Delhi 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT –I: DEFINITIONS & TYPES OF DISASTER

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Disaster Management	1	04.12.2023		TLM2	
2.	Basic definitions	1	05.12.2023		TLM2	
3.	Types of Disasters	1	07.12.2023		TLM2	
4.	Concept of disaster management	1	11.12.2023		TLM2	
5.	Disaster management cycle	1	12.12.2023		TLM2	
6.	Vulnerability	1	14.12.2023		TLM2	
7.	Mitigation	1	16.12.2023		TLM2	
8.	Natural disasters: Drought and cyclone	1	18.12.2023		TLM2	
9.	Natural disasters: Earthquake and landslides	1	19.12.2023		TLM2	
10.	Engineering and technical failure	1	21.12.2023		TLM2	
11.	Nuclear and chemical disaster	1	23.12.2023		TLM2	
12.	Accident-related disasters	1	26.12.2023		TLM2	
13.	HPC on DM in India- DM Act 2005	1	28.12.2023		TLM2	
14.	Revision		30.12.2023		TLM2	
No. of classes required to complete UNIT-I:14				No. of classes taken:		

UNIT-II: IMPACT OF DISASTERS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Impacts due to earthquake and cyclone	1	02.01.2024		TLM2	
2.	Impacts due to landslides and fire hazards	1	04.01.2024		TLM2	
3.	Impacts due to life & live stock and habitation	1	06.01.2024		TLM2	
4.	Agriculture & livelihood loss- health hazards	1	08.01.2024		TLM2	
5.	Malnutrition problems	1	09.01.2024		TLM2	
6.	Contamination of water	1	11.01.2024		TLM2	
7.	Impact on children- environmental loss	1	18.01.2024		TLM2	
8.	Revision		20.01.2024		TLM2	
No. of classes required to complete UNIT-II:07				No. of classes taken:		

UNIT-III: ROLE OF TECHNOLOGY IN DISASTER MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Role of remote sensing	1	22.01.2024		TLM2	
2.	Information system and decision-making tool	1	23.01.2024		TLM2	
3.	DM for infra structure	1	25.01.2024		TLM2	
4.	DM for electrical substances	1	27.01.2024		TLM2	
5.	DM for roads and bridges	1	05.02.2024		TLM2	

6.	Mitigation programme for earthquakes	1	06.02.2024		TLM2
7.	Geospatial information in agriculture drought assessment	1	08.02.2024		TLM2
8.	Multimedia technology in disaster risk management and training	1	12.02.2024		TLM2
9.	Transformable indigenous knowledge in disaster reduction	1	13.02.2024		TLM2
10.	Transformable indigenous knowledge in disaster reduction	1	15.02.2024		TLM2
11.	Revision		17.02.2024		TLM2
No. of classes required to complete UNIT-III:10				No. of classes taken:	

UNIT- IV: PLANNING & RISK PREVENTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	19.02.2024		TLM2	
2.	Planning	1	20.02.2024			
3.	Early warning system	1	22.02.2024		TLM2	
4.	Crisis intervention and management	1	24.02.2024		TLM2	
5.	Response and Rehabilitation after Disasters	1	26.02.2024		TLM2	
6.	Temporary shelter – food and nutrition-safe drinking water	1	27.02.2024		TLM2	
7.	Rehabilitation after cyclones	1	29.02.2024		TLM2	
8.	Response to drought	1	02.03.2024		TLM2	
9.	Response to river erosion	1	04.03.2024		TLM2	
10.	Response after earthquake	1	05.03.2024		TLM2	
11.	Response after Tsunami- Hunger and Disaster	1	07.03.2024		TLM2	
No. of classes required to complete UNIT-IV:10				No. of classes taken:		

UNIT-V: EDUCATION AND COMMUNITY PREPAREDNESS & CASE STUDIES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	11.03.2024		TLM2	
2.	Essentials of disaster education	1	12.03.2024			
3.	School awareness and safety programs, Community based disaster recovery	1	14.03.2024		TLM2	
4.	Voluntary agencies and community participation at various stages of disaster management	1	16.03.2024		TLM2	
5.	Building community capacity for action	1	18.03.2024		TLM2	
6.	Corporate sector and disaster risk reduction	1	19.03.2024		TLM2	
7.	A community focused approach	1	21.03.2024		TLM2	
8.	Case studies on different disasters in the world-1	1	23.03.2024		TLM2	
9.	Case studies on different disasters in the world-2	1	26.03.2024		TLM2	
10.	Case studies on different disasters in	1	28.03.2024		TLM2	

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

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

PART-C

EVALUATION PROCESS (R17 Regulations):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor
(B NARASIMHARAO)

Course Coordinator
(B NARASIMHARAO)

Module Coordinator
(B NARASIMHARAO)

HOD
(Dr.J.V.R)



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B.Tech. IV-Sem., CSE-C		
ACADEMIC YEAR	: 2023-24		
COURSE NAME & CODE	: INFORMATION SECURITY LAB & 20CS61		
L-T-P STRUCTURE	: 0-0-3	COURSE CREDITS	: 1.5
COURSE INSTRUCTOR	: T N V S Praveen		

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 Edition

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	05/12/2023 12/12/2023		DM5	
2.	Lab Cycle -2	3 3	19/12/2023 26/12/2023		DM5	
3.	Lab Cycle-3	3 3	02/01/2024 23/01/2024		DM5	
4.	Lab Cycle-4	3	06/02/2024		DM5	
5.	Lab Cycle-5	3	13/02/2024		DM5	
6.	Lab Cycle-6	3	27/02/2024		DM5	
7.	Lab Cycle-7	3	05/03/2024		DM5	
8.	Lab Cycle-8	3	17/03/2024		DM5	
9.	Lab Cycle-9	3	26/03/2024		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				
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

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.: 2023-24

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

COURSE EDUCATIONAL OBJECTIVE(CEO):

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	08-12-2023 15-12-2023		
2.	Implementation of Run a basic Word Count Map Reduce program	3	22-12-2023		
3.	Implementation of Matrix Multiplication with Hadoop Map Reduce	3	29-12-2023		
4.	Implementation of Weather mining by taking weather dataset using Map Reduce	3	05-1-2024		
5.	Installation of Hive along with practice examples	3	12-1-2024		
6.	Installation of Sqoop along with Practice examples	3	19-1-2024		
7.	Downloading and installing Tableau Understanding about importing data, saving, opening, and sharing work books	3	02-02-2024		
8.	Data Preparation with Tableau	3	09-02-2024 16-02-2024		
9.	Charts: Bar Charts, Legends, Filters ,and Hierarchies ,Step Charts, Line Charts	3	23-02-2024		
10.	Maps: Symbol Maps, Filled Maps, Density Maps, Maps with Pie Charts	3	01-03-2024		
11.	Interactive Dash boards	3	08-03-2024		
12.	Interactive Dash boards	3	15-03-2024		
13.	Interactive Dash boards	3	22-03-2024		
14.	Lab Internal Exam	3	29-03-2024		

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	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	Dr. K. Devi Priya	Dr. K Naga Prasanthi	Dr. D. Veeraiah
Signature				



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

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM	: B. TECH-VI-Sem-C Sec
ACADEMIC YEAR	: 2023-24
COURSE NAME & CODE	: SERVER SIDE SCRIPTING LAB & 20CS63
L-T-P STRUCTURE	: 0-0-3
COURSE CREDITS	: 1.5
COURSE INSTRUCTOR	: Mrs. B. Usha Rani

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							

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	07-12-2023 & 14-12-2023		DM5	
2.	MODULE-2	3	21-12-2023 & 28-12-2023		DM5	
3.	MODULE-3	3	04-01-2024 & 11-01-2024		DM5	
4.	MODULE-4	3	18-01-2024		DM5	
5.	MODULE-5	3	25-01-2024 & 08-02-2024		DM5	
6.	MODULE-6	3	15-02-2024		DM5	
7.	MODULE-7	3	22-02-2024		DM5	
8.	MODULE-8	3	29-02-2024 & 07-03-2024		DM5	
9.	MODULE-9	3	14-03-2024		DM5	
10.	MODULE-10	3	21-03-2024		DM5	
11.	INTERNAL EXAM	3	28-03-2024			

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-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

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Name of the Faculty	Mrs. B. Usha Rani		Dr. Y. V. B. Reddy	Dr. D. Veeraiah
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