LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)
Accredited by NAAC with'A' Grade & NBA (Under Tier - I),
An ISO 21001:2018,14001:2015,50001:2018 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: M Gayathri
Course Name & Code : Cloud Computing & 20CS24
L-T-P Structure : **3-0-0** **Credits:** 3
Program/ Sem /Sec : B. Tech/VII/A **A.Y.:** 2025-26

PREREQUISITES : **Computer Networks, and Operating Systems**

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of the course is to introduce the concepts of evolving computer model, cloud computing, levels of services that can be achieved by cloud. and security aspects in the cloud.

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

CO1	Illustrate the key dimensions of the challenge of Cloud Computing **(Understand – L2)**
CO2	Classify the Levels of Virtualization and mechanism of tools. **(Understand – L2)**
CO3	Analyze Cloud infrastructure including Google Cloud and Amazon Cloud. **(Analyze – L4)**
CO4	Create Combinatorial Auctions for cloud resource and design scheduling algorithms for computing cloud. **(Apply – L3)**
CO5	Assess control storage systems and cloud security, the risks involved its impact and develop cloud application **(Analyze – L4)**

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	-	-	-	-	-	-	-	-	-	-	1	-
CO2	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
CO3	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
CO4	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
CO5	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
1 - Low				**2 –**Medium									**3 –** High		

TEXTBOOKS:

T1 Distributed and Cloud Computing, Kai Hwang, Geoffry C. Fox, Jack J. Dongarra MK Elsevier.(**UNIT-1,2&3**)

T2 Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier**.(UNIT-4&5)**

REFERENCE BOOKS:

R1 Cloud Computing, A Hands on approach, Arshadeep Bahga, Vijay Madisetti, University Press

R2 Cloud Computing, A Practical Approach, Anthony T Velte, Toby J Velte, Robert Elsenpeter, TMH

R3 Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christen vecctiola, S Tammaraiselvi, TMH

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Systems Modelling, Clustering and Virtualization

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 Course and COs**	1	30/06/2025		TLM1,2	
2.	**Introduction to Unit-I**	1	01/07/2025		TLM1,2	
3.	**Scalable Computing over the Internet**	3	02/07/2025 03/07/2025 05/07/2025		TLM1,2	
4.	**Technologies for Network Based Systems**	3	07/07/2025 08/07/2025 09/07/2025		TLM1,2	
5.	**System models for Distributed and Cloud Computing**	2	10/07/2025 14/07/2025		TLM1,2	
6.	**Performance, Security and Energy Efficiency**	3	15/07/2025 16/07/2025 17/07/2025		TLM1,2	
7.	**Activity / Assignment**	1	19/07/2025		TLM1,2	
No. of classes required to complete UNIT-I: 14				**No. of classes taken:**		

UNIT-II: Virtual Machines and Virtualization of Clusters and Data Centres

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.	**Implementation Levels of Virtualization**	3	21/07/2025 22/07/2025 23/07/2025		TLM1,2	
2.	**Virtualization Structures/ Tools and Mechanisms**	3	24/07/2025 28/07/2025 29/07/2025		TLM1,2	
3.	**Virtualization of CPU, Memory and I/O Devices**	3	30/07/2025 31/07/2025 02/08/2025		TLM1,2	
4.	**Virtual Clusters and Resource Management**	3	04/08/2025 05/08/2025 06/08/2025		TLM1,2	
5.	**Virtualization for Data-Center Automation.**	3	07/08/2025 11/08/2025 12/08/2025		TLM1,2	
6.	**Activity / Assignment**	1	13/08/2025		TLM1,2	
No. of classes required to complete UNIT-II: 16				**No. of classes taken:**		

UNIT-III: Cloud Platform Architecture

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.	**Cloud Computing and Service Models**	3	14/08/2025 16/08/2025 18/08/2025		TLM1,2	
2.	**Public Cloud Platforms**	2	19/08/2025 20/08/2025		TLM1,2	
3.	**Service Oriented Architecture**	2	21/08/2025 23/08/2025		TLM1,2	
MID EXAMINATION-I 08-09-2024 to 13-09-2024						
4.	**Programming on Amazon AWS**	2	15/09/2025 16/09/2025		TLM1,2	
5.	**Programming on Microsoft Azure**	3	17/09/2025 18/09/2025 20/09/2025		TLM1,2	
6.	**Activity/ Assignment**	1	22/09/2025			
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

UNIT-IV: Cloud Resource Management and Scheduling

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.	**Policies and Mechanisms for Resource Management**	2	23/09/2025		TLM1,2	
2.	**Applications of Control Theory to Task Scheduling on a Cloud**	2	24/09/2025 25/09/2025		TLM1,2	
3.	**Stability of a Two-Level Resource Allocation Architecture**	2	27/09/2025 06/10/2025		TLM1,2	
4.	**Feedback Control Based on Dynamic Thresholds**	1	07/10/2025		TLM1,2	
5.	**Coordination of Specialized Autonomic Performance Managers**	2	08/10/2025 09/10/2025		TLM1,2	
6.	**Resource Bundling**	1	13/10/2025		TLM1,2	
7.	**Scheduling Algorithms for Computing Clouds**	2	14/10/2025 15/10/2025		TLM1,2	
8.	**Fair Queuing**	2	16/10/2025 18/10/2025		TLM1,2	
9.	**Start Time Fair Queuing**	2	20/10/2025 21/10/2025		TLM1,2	
10.	**Activity / Assignment**	1	22/10/2025			
No. of classes required to complete UNIT-IV: 17				**No. of classes taken:**		

UNIT-V: Storage Systems

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.	**Evolution of storage technology**	1	23/10/2025		TLM1,2	
2.	**Storage models, file systems and database**	1	25/10/2025		TLM1,2	
3.	**Distributed file systems**	2	27/10/2025 28/10/2025		TLM1,2	
4.	**General parallel file systems**	3	01/11/2025 03/11/2025 04/11/2025		TLM1,2	
5.	**Google file system**	3	08/11/2025 10/11/2025 11/11/2025		TLM1,2	
6.	**Activity/ Assignment**	1	12/11/2025			
7.	**Revision**	2	13/11/2025 15/11/2025			
No. of classes required to complete UNIT-V: 13				**No. of classes taken:**		
MID EXAMINATION – II 17.11.2024 to 22.11.2024						

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.	**Building and hosting a simple cloud application using Google App Engine**	2	29/10/2025 30/10/2025		TLM1,2	
2.	**Hosting a simple cloud application using Microsoft Azure**	2	05/11/2025 06/11/2025		TLM1,2	

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

PEVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of 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.
PO10	**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.
PO11	**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.
PO12	**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	**M. Gayathri**	**M. Gayathri**	**Dr. D. Venkata Subbaiah**	**Dr. S. Nagarjuna Reddy**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs Swathi Buragadda
Course Name & Code : NATURAL LANGUAGE PROCESSING-20AD09
L-T-P Structure : **3-0-0** **Credits:** 03
Program/Sem/Sec : B.Tech-CSE / VII SEM/A-Sec
A.Y. : 2025-26

PRE-REQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of the course is to make learn the basic elements of C programming, control structures, derived data types, Modular programming, user defined structures, basics of files and its I/O operations.

CO1	Familiar with the basic components of NLP. **(Understand - L2)**
CO2	Applying N-gram models to predict a sequence of text. **(Apply - L3)**
CO3	Build a basic language understanding system using preliminary concepts of NLTK library. **(Apply - L3)**
CO4	Exposure on advanced techniques for understanding patterns in text **(Apply-L3)**
CO5	Understand the semantics of linguistic components in a natural dialogue **(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	2	2	-	-	3	-	-	-	-	-	-	2	2	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	-	3	-	3	-	-	-	-	-	-	-	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).

TEXTBOOKS:

1. Daniel Jurafsky, James H. Martin ,"Speech and Language Processing" , Third Edition, PHI, 2020.
2. https://realpython.com/nltk-nlp-python/#getting-text-to-analyze

REFERENCE BOOKS:

1. Natural Language Processing with Python: Analysing Text with the Natural Language Toolkit, Steven Bird, Ewan Klein, 2011
2. Applied Text Analysis with Python: Enabling Language-Aware Data Products with Machine Learning, Benjamin Bengfort, Rebecca Bilbro, 2018
3. Speech and Language Processing, 2nd Edition, Daniel Jurafsky, James H. Martin, 2009

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	Learning Outcomes	HOD Sign Weekly
1	Introduction to NLP	1	30-06-2025		**TLM1**	CO1	
2	Knowledge in Speech and Language Processing	2	01-07-2025 02-07-2025		**TLM1**	CO1	
3	Ambiguity; Models and Algorithms	2	03-07-2025 05-07-2025		**TLM1**	CO1	
4	Language, Thought and Understanding;	2	07-07-2025 08-07-2025		**TLM1**	CO1	
5	History Regular Expressions Regular Expression	2	09-07-2025 10-07-2025		**TLM1**	CO1	
6	Words; Corpora;	2	12-07-2025 14-07-2025		**TLM1**	CO1	
7	Text Normalization	2	15-07-2025 16-07-2025		**TLM1**	CO1	
8	Minimum Edit Distance	2	17-07-2025 19-07-2025		**TLM1**	CO1	
9	Unit-I Assignment Test	1	21-07-2025		**TLM1**	CO1	
No. of classes required to complete UNIT-I		16	No. of classes taken:				

UNIT-II: N-gram Language Models

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
10	N-Grams; Evaluating Language Models	2	22-07-2025 23-07-2025		TLM1	CO2	
11	Generalization and Zeros.	2	24-07-2025 28-07-2025		TLM1	CO2	
12	Smoothing: Laplace Smoothing	2	29-07-2025 30-07-2025		TLM1	CO2	
13	Add-k Smoothing	2	31-07-2025 02-08-2025		TLM1	CO2	
14	Backoff and Interpolation	2	04-08-2025 05-08-2025		TLM1	CO2	
15	Kneser-Ney Smoothing	2	06-08-2025 07-08-2025		TLM1	CO2	
16	Unit-II Assignment Test	1	09-08-2025		TLM1	CO2	
No. of classes required to complete UNIT-2		13	No. of classes taken:				

UNIT – III: Natural language processing tools in Python (NLTK Package)

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
17	Part-I: Introduction to NLTK	2	11-08-2025 12-08-2025		**TLM1**	CO3	
18	Tokenizing; Filtering Stop words; Stemming	2	13-08-2025 14-08-2025		**TLM1**	CO3	
19	Tagging parts of speech; Lemmatizing;	2	18-08-2025 19-08-2025		**TLM1**	CO3	
20	Chunking	2	20-08-2025 21-08-2025		**TLM1**	CO3	
21	Chinking Part-II: Using Named Entity Recognition (NER)	2	23-08-2025 15-09-2025		**TLM1**	CO3	
22	Getting Text to Analyze	2	16-09-2025 17-09-2025		**TLM1**	CO3	
23	Using a Concordance	2	18-09-2025 20-09-2025		**TLM1**	CO3	
24	Making a Dispersion Plot.	2	22-09-2025 23-09-2025		**TLM1**	CO3	
25	Unit-III Assignment Test	1	24-09-2025		**TLM1**	CO3	
No. of classes required to complete UNIT-3		17	No. of classes taken:				

UNIT-IV: Information Extraction

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
26	Relation Extraction Algorithms	2	25-09-2025 27-09-2025		TLM1	CO4	
27	Using Patterns to extract relations	2	04-10-2025 06-10-2025		TLM1	CO4	
28	Relation extraction via supervised learning	2	07-10-2025 08-10-2025		TLM1	CO4	
29	Semi supervised relation extraction via bootstrapping	2	09-10-2025 11-10-2025		TLM1	CO4	
30	Distant Supervision for Relation Extraction	2	13-10-2025 14-10-2025		TLM1	CO4	
31	Evaluation of Relation Extraction	2	15 -10-2025		TLM1	CO4	
32	Extracting Times	2	16-10-2025		TLM1	CO4	
33	Extracting Events and their Times; Template Filling	2	18-10-2025 20-10-2025		TLM1	CO4	
34	Unit-IV Assignment Test	1	22-10-2025		TLM1	CO4	
No. of classes required to complete UNIT-4		17	No. of classes taken:				

UNIT-V: Word Senses and WordNet

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
35	Defining Word Senses, How many senses do words have	3	23-10-2025 25-10-2025 27-10-2025		TLM1	CO5	
36	Relations between senses	3	28-10-2025 29-10-2025 30-10-2025		TLM1	CO5	
37	WordNet: Sense relations in WordNet	3	01-11-2025 03-11-2025 04-11-2025		TLM1	CO5	
38	Word Sense Disambiguation	2	05-11-2025 06-11-2025		TLM1	CO5	
39	Alternate WSD algorithms and Tasks	2	08-11-2025 10-11-2025		TLM1	CO5	
40	Alternate WSD algorithms and Tasks	2	11-11-2025 12-11-2025		TLM1	CO5	
41	Unit-V Assignment Test	1	13-11-2025		TLM1	CO5	
42	Revision	1	15-11-2025				
No. of classes required to complete UNIT-5		17	No. of classes taken:				

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

EVALUATION PROCESS:

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mrs B.Swathi	Mrs. B.Swathi	Dr K.Devi Priya	Dr. S.Nagarjuna Reddy
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. CH. SRINIVASA RAO
Course Name & Code : BLOCKCHAIN TECHNOLOGIES (20CS29)
L-T-P Structure : 3-0-0 Credits: 3
Program/Sem/Sec : B.Tech., CSE., VII-A A.Y: 2025-26

PRE-REQUISITE: Information Security

COURSE EDUCATIONAL OBJECTIVES (CEOs):

To understand block chain technology and Crypto currency works.

COURSE OUTCOMES (COs): After the completion of the course, student will be able to

CO 1	Demonstrate the block chain basics, Crypto currency. (UnderstandL2)
CO 2	Compare and contrast the use of different private vs. public block chain and use cases (Understand-L2)
CO 3	Design an innovative Bit coin Block chain and scripts, Block chain Science on varies coins (Apply-L3)
CO 4	Classify Permission Block chain and use cases Hyper ledger, Corda(Analyze-L4)
CO 5	Use of Block-chain in E-Governance, Land Registration, Medical Information Systems and others (Apply-L3)

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	-	-	-	-	-	-	-	-	-	2	-
CO2	3	2	1	1	-	-	-	-	-	-	-	1	-	2	-
CO3	2	3	1	1	-	-	-	-	-	-	-	-	-	2	-
CO4	3	2	1	-	-	-	-	-	-	-	-	-	-	2	-
CO5	1	3	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: Block chain Blue print for Economy by Melanie Swan

REFERENCE BOOKS:

Block chain Basics: A Non-Technical Introduction in 25 Steps 1st Edition, by Daniel Drescher.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section A

UNIT-I:

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	2	01-07-2025 02-07-2025		TLM2	
2.	basic ideas behind block chain	2	03-07-2025 03-07-2025		TLM2	
3.	how it is changing the landscape of digitalization	2	08-07-2025 09-07-2025		TLM2	
4.	introduction to cryptographic concepts required	2	10/07/2025 10/07/2025		TLM2	
5.	Block chain or distributed trust	2	15/07/2025 16/07/2025		TLM2	
6.	Currency	1	17/07/2025		TLM2	
7.	Cryptocurrency	1	17/07/2025		TLM2	
8.	How a Cryptocurrency works	2	22/07/2025 23/07/2025		TLM2	
9.	Financial services	1	24/07/2025		TLM2	
10.	Bitcoin prediction markets	2	24/07/2025 29/07/2025		TLM2 TLM2	
11.	Tutorial-I	1	30/07/2025		TLM3	
No. of classes required to complete UNIT-I		**17**		**No of classes taken**		

UNIT-II:

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.	Hashing	1	31/07/2025		TLM2	
13.	Public key cryptosystems	2	31/07/2025 05/08/2025		TLM2	
14.	Private vs Public block chain and use cases	1	06/08/2025		TLM2	
15.	Hash Puzzles,	1	07/08/2025		TLM2	
16.	Extensibility of Block chain concepts	2	07/08/2025 12/08/2025		TLM2	
17.	Digital Identity verification	1	13/08/2025		TLM2	
18.	Block chainNeutrality	1	14/08/2025		TLM2	
19.	Digital art	1	14/08/2025		TLM2	

20.	Block chain Environment	1	19/08/2025		TLM2	
21.	Tutorial-II	1	20/08/2025		TLM3	
No. of classes required to complete UNIT-II		12		**No of classes taken**		

UNIT-III:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Bitcoin Block chainand scripts	1	21/08/2025		TLM2	
23.	Use cases of Bitcoin Blockchain scriptinglanguage in micropayment	1	21/08/2025		TLM2	
24.	escrow etc Downsideof Bit coin mining	1	16/09/2025		TLM2	
25.	Block chain Science: Gridcoin	2	17/09/2025 18/09/2025		TLM2	
26.	Folding coin	1	18/09/2025		TLM2	
27.	Block chain Genomics	1	23/09/2025		TLM2	
28.	Bit coin MOOCs	1	24/09/2025		TLM2	
29.	Tutorial-III	1	25/09/2025		TLM3	
No. of classes required to complete UNIT-III		**09**		**No of classes taken**		

UNIT-IV:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
30.	Ethereum continued	1	25/09/2025		TLM2	
31.	IOTA	1	01/10/2025		TLM2	
32.	The real need for mining	1	07/10/2025		TLM2	
33.	consensus	1	08/10/2025		TLM2	
34.	Byzantine Generals Problem	1	09/10/2025		TLM2	
35.	Consensus as a distributed	2	09/10/2025 14/10/2025		TLM2	
	coordination problem					
36.	Coming to private or permissioned block chains	2	15/10/2025 16/10/2025		TLM2	
37.	Introduction to Hyper ledger	1	16/10/2025		TLM2	
38.	Currency & Token	1	22/10/2025		TLM2	

39.	Campus coin	1	23/10/2025		TLM2	
40.	Coin drop as a strategy for public adoption	1	23/10/2025		TLM2	
41.	Currency Multiplicity	1	28/10/2025		TLM2	
42.	Demurrage currency	1	29/10/2025		TLM2	
43.	Tutorial-IV	1	30/10/2025		TLM3	
No. of classes required to complete UNIT-IV		**16**		No. of classes taken		

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
44.	Technical challenges	1	30/10/2025		TLM2	
45.	Business model challenges	1	04/11/2025		TLM2	
46.	Scandals and Public perception	1	05/11/2025		TLM2	
47.	Government Regulations	1	06/11/2025		TLM2	
48.	Uses of Block chain in E-Governance	1	06/11/2025		TLM2	
49.	Land Registration	1	11/11/2025		TLM2	
50.	Medical Information Systems.	1	12/11/2025		TLM2	
51.	Tutorial – V / Quiz - V	1	13/11/2025		TLM3	
52.	Discussion about SEE paper	1	13/11/2025		TLM6	
No. of classes required to complete UNIT-V		**9**		No. of classes taken		

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

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =75% of Max (M1+Q1+A1), (M2+Q2+A2)) + 25% of Min (M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex

	engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, 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	HOD
Mr.Ch. Srinivasa Rao	Dr. K. Phaneendra	Dr. D. Venkata Subbaiah	Dr. S. Nagarjuna Reddy

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DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : P. Mohanaganga Raju

Course Name & Code : **BASICS OF CIVIL ENGINEERING & 20CE81**

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

Program/Sem/Sec : B.Tech., CSE., VII-Sem., Sections- A A.Y : 2025-26

PRE-REQUISITE: Nil

COURSE OBJECTIVES: This course deals with the importance of building planning, properties and applications of various building materials, soil classification and different types of foundations, important aspects of surveying, levelling operations and identify the terminology in roadway and railway networks, principles of water resources and environmental engineering.

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

CO 1	Understand the importance of building planning for construction. (Understand-L2)
CO 2	Identify the uses and characteristics of different building materials. (Remember-L1)
CO 3	Understand the different types of soils and foundations required for specific usage. (Understand-L2)
CO 4	Differentiate the basics of surveying and levelling operations for field application and categorize the important elements of roadway and railway networks (Understand-L2)
CO 5	Understand the importance of quantity and quality aspects of water in the society (Remember-L1)

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

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

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

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

TEXT BOOKS:

T1 1. M.S Palanichamy "Basic Civil Engineering", Tata McGraw Hill Publishing 2000.

REFERENCE BOOKS:

R1 1. S S Bhavikatti "Basic Civil Engineering", New age International Publications, 2010

R2 C P Kaushik& S S Bhavikatti "Basic Civil Engineering ", New age International Publications 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Building Planning

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 and course outcomes	1	30-06-2025		TLM2	
2.	Building Planning- Role of a Civil Engineer	1	01-07-2025		TLM2	
3.	Inter connection among specializations in Civil Engineering	1	02-07-2025		TLM2	
4.	Elements of a Building, Basic Requirements of a Building	1	05-07-2025		TLM2	
5.	Planning- Hot and dry climates	1	07-07-2025		TLM2	
6.	Hot and wet climates, Cold climatic conditions	1	08-07-2025		TLM2	
7.	Grouping, Privacy, circulation	1	09-07-2025		TLM2	
8.	Sanitation and ventilation	1	12-07-2025		TLM2	
9.	Orientation, Economy,	1	14-07-2025		TLM2	
10.	Role of Bye-laws	1	15-07-2025		TLM2	
No. of classes required to complete UNIT-I:10				No. of classes taken		

UNIT-II: Building Materials

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.	Building Materials -Classification	1	16-07-2025		TLM2	
2.	Rocks - Composition, Properties, Commercial forms, Uses	1	19-07-2025		TLM2	
3.	Bricks - Composition, Properties, Commercial forms, Uses	2	21-07-2025 22-07-2025		TLM2	
4.	Timber, Ply wood - Classification, Composition, Properties, Commercial forms	1	23-07-2025		TLM2	
5.	Glass-Classification, Composition, Properties, Commercial forms,	1	26-07-2025		TLM2	
6.	Bitumen- Classification, Composition, Properties, Commercial forms,	1	28-07-2025		TLM2	

7.	Aluminium, Cement Classification, Composition, Properties, Commercial forms,	2	29-07-2025 30-07-2025		TLM2	
8.	Steel, Concrete Classification, Composition, Properties, Commercial forms, Uses	2	02-08-2025 04-08-2025		TLM2	
9.	Mortar Classification, Composition, Properties, Commercial forms, Uses	2	05-08-2025 06-08-2025		TLM2	
10.	Concept of eco-friendly materials, examples	1	11-08-2025		TLM2	
No. of classes required to complete UNIT-II:14				No. of classes taken:		

UNIT-III: SOIL CLASSIFICATION AND FOUNDATION

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.	Types of soils, soil classification	2	12-08-2025 13-08-2025		TLM2	
2.	Engineering properties	1	18-08-2025		TLM2	
3.	Bearing Capacity of soil, purpose and methods of improving bearing capacity	1	19-08-2025		TLM2	
4.	Foundations – Requirements	1	20-08-2025		TLM2	
5.	Foundations - Loads, Types	2	23-08-2025 15-09-2025		TLM2	
6.	Foundations for special structures-water tanks-	1	16-09-2025		TLM2	
7.	**MID-1**	**08-09-2025 to 13-09-2025**				
8.	Foundations for special structures-silos, chimneys	1	17-09-2025		TLM2	
9.	Foundations for special structures-transmission line towers- cooling towers,	2	20-09-2025 22-09-2025		TLM2	
10.	Foundations for special structures-telecommunication towers	1	23-09-2025		TLM2	
No. of classes required to complete UNIT-III:13				No. of classes taken:		

UNIT-IV : SURVEYING, LEVELLING & HIGHWAY NETWORK

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.	Objective of surveying– Principles, applications and uses of - chain surveying	1	24-09-2025		TLM2	
2.	Principles, applications and uses of Theodolite, levelling	2	27-09-2025 06-10-2025		TLM2	
3.	Principles, applications and uses of contour maps, Planimeter	1	07-10-2025		TLM2	
4.	EDM Concept - Linear distance and area measurement	1	08-10-2025		TLM2	
5.	Total station- GIS-Concept and applications in civil engineering.	1	11-10-2025		TLM2	
6.	Indian highways- Basic	2	13-10-2025		TLM2	

	terminology- Classification of roads - PIEV theory		14-10-2025			
7.	Traffic signs - IRC Code provisions	1	15-10-2025		TLM2	
8.	Indian railways –Permanent way and components of railway track	2	18-10-2025 21-10-2025		TLM2	
9.	Gauges – rails -sleepers – ballast.	1	22-10-2025			
No. of classes required to complete UNIT-IV:12				No. of classes taken:		

UNIT-V: WATER RESOURCES AND ENVIRONMENTAL ENGINEERING

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.	Objectives of water supply system-Sources of water supply-Hydrologic cycle	1	25-10-2025		TLM2	
2.	Rainfall measurement - Purpose of dams, reservoirs, intakes, infiltration galleries	2	27-10-2025 28-10-2025		TLM2	
3.	Water demands –Water quality parameters and their impacts - Principles of water treatment	1	29-10-2025		TLM2	
4.	Objectives and methods of water distribution systems – Sewage generation in a society –	1	01-11-2025		TLM2	
5.	Wastewater characteristics and their impacts	1	03-11-2025		TLM2	
6.	Principles of sewage treatment	1	04-11-2025		TLM2	
7.	Disposal of sewage	1	05-11-2025		TLM2	
8.	Water quality standards for – drinking purpose,	1	08-11-2025		TLM2	
9.	Irrigation	1	10-11-2025		TLM2	
10.	Revision	1	11-11-2025		TLM2	
11.	Revision	1	12-11-2025		TLM2	
12.	Revision	1	15-11-2025		TLM2	
13.	**MID-2**	**17-11-2025 to 22-11-2025**				
No. of classes required to complete UNIT-V:10				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
PEO 2	To adapt to the modern engineering tools for planning, analysis, design, implementation of analytical data and assess their relevant significance in societal and legal issues necessary in their professional career.
PEO 3	To exhibit professionalism, ethical attitude, communication, managerial skills, team work and social responsibility in their profession and adapt to current trends by engaging in continuous learning.

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 problem
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 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 analyse the various laboratory tests required for the professional demands.
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain.

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Mr. P. M. Ganga Raju)	(Mr. P. M. Ganga Raju)	(Dr. C. Rajamallu)	(Dr. K. V. Ramana)

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr A.V.Ravi Kumar
Course Name & Code : Utilization of Electrical Energy & 20EE83
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech, CSE-A., VII-Sem. A.Y : 2025-26

Pre-requisites : --NIL
Course Educational Objective: This course enables the student to familiarize with characteristics of various drives, comprehend the different issues related to heating, welding and illumination.

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

CO 1	Understand mechanism of electric heating and electric welding**(Understanding –L2)**
CO 2	Analyze performance of various lighting schemes**(Understanding –L2)**
CO 3	Analyze the performance of electric drive systems**(Understanding –L2)**
CO 4	Illustrate the different schemes of traction and its main components **(Understanding –L2)**
CO5	Understand various tariff methods and power factor improvement techniques **(Understanding –L2)**

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 a	PSO b	PSO c
CO1	2	2	2												
CO2	2	2	2								2				
CO3	2	2	2												
CO4	2	2	2								2				
CO5	2	2	2								2				

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

TEXT BOOKS:

T1: C.L.Wadhwa "Generation, Distribution and Utilization of Electrical energy, New Age International Publishers,3rd Edition,2015.

T2: N.V.Suryanarayana "Utilization of electric power including electric drives and electric traction, New age international publishers New Delhi,2nd edition 2014.

REFERENCE BOOKS:

R1: Art & Science of Utilization of electrical Energy, Partab, Dhanpat Rai & Co., 2004.
R2: Utilization of Electric Energy, E. Openshaw Taylor and V. V. L. Rao, Universities Press, 2009.

Part - B
COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I : ELECTRIC HEATING &WELDING

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, CEO's &CO's	1	02-07-2025		TLM1	
2.	Advantages &applications of Electric heating	1	03-07-2025		TLM2	
3.	Classification of electric heating	1	04-07-2025		TLM2	
4.	Resistance heating	1	05-07-2025		TLM2	
5.	Arc heating	1	09-07-2025		TLM2	
6.	Induction heating	1	10-07-2025		TLM2	
7.	dielectric heating	1	11-07-2025		TLM2	
8.	Causes of failures of heating elemdents	1	16-07-2025		TLM2, TLM6	
9.	Materials for heating elements	1	17-07-2025		TLM2, TLM6	
10.	Requirement of good heating material	1	18-07-2025		TLM2	
11.	ARC Furnace	1	19-07-2025		TLM2, TLM4	
12.	Resistance welding	1	23-07-2025		TLM2	
13.	Spot welding,seam welding	1	24-07-2025		TLM2, TLM4	
14.	,Arc welding	1	25-07-2025		TLM2, TLM4	
15.	Comparision between AC and DC welding	1	26-07-2025		TLM2, TLM6	
No. of classes required to complete UNIT-I : 15					No. of classes taken:	

UNIT-II : ILLUMINATION ENGINEERING

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	Introduction	1	30-07-2025		TLM1	
17	Nature of light	1	31-07-2025		TLM2	
18	Laws of illumination	1	01-08-2025		TLM1	
19	Laws of illumination	1	02-08-2025		TLM1	
20	Lighting schemes, sources of light	1	06-08-2025		TLM2	
21	Fluorescent Lamp, CFL and LED	1	07-08-2025		TLM1, TLM4	
22	Sodium Vapor Lamp	1	08-08-2025		TLM1, TLM4	
23	Neon lamps	1	13-08-2025		TLM1, TLM2	
24	mercury vapor lamps	1	14-08-2025		TLM1, TLM2	

25	Comparision between tungsten &fluroscent tubes	1	16-08-2025		TLM1, TLM2	
26	Requirements of good lighting	1	20-08-2025		TLM2, TLM6	
27	Street lighting	1	21-08-2025		TLM2	
28	Assignment/Quiz	1	22-08-2025		TLM1	
No. of classes required to complete UNIT-II : 13					No. of classes taken:	

UNIT-III: ELECTRIC DRIVES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
29	Introduction	1	23-08-2025		TLM2	
30	Elements of drive, advantages	1	17-09-2025		TLM2	
31	Factors affecting selection of motor	1	18-09-2025		TLM2	
32	Types of loads	1	19-09-2025		TLM2	
33	Industrial applications	1	20-09-2025		TLM1, TLM2	
34	Transient Characteristics of drives	1	24-09-2025		TLM1, TLM2	
35	Steady state characteristics of drives	1	25-09-2025		TLM1, TLM2	
36	Size of motor, Load Equalization	1	26-09-2025		TLM1, TLM2	
37	Assignment/Quiz	1	03-10-2025		TLM2	
No. of classes required to complete UNIT-III : 09					No. of classes taken:	

UNIT-IV : ELECTRIC TRACTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
39	Introduction	1	04-10-2025		TLM2	
40	Requirement of an ideal traction system	1	08-10-2025		TLM2	
41	Supply system for electric traction	1	09-10-2025		TLM2	
42	Train movement	1	10-10-2025		TLM2	
43	mechanism of train movement	1	15-10-2025		TLM2	
44	Traction motors	1	16-10-2025		TLM1, TLM2	
45	Modern trends in electric traction	1	17-10-2025		TLM2, TLM6	
46	Automation in traction	1	18-10-2025		TLM1, TLM2	
47	Speed time curves for different services	1	22-10-2025		TLM1, TLM2	
48	Trapezoidal speed time curves	1	23-10-2025		TLM1, TLM2	

49	Quadrilateral speed time curves	1	24-10-2025		TLM1	
50	Problems on train movement	1	25-10-2025		TLM1	
51	Assignment/quiz	1	29-10-2025		TLM2	
No. of classes required to complete UNIT-IV : 13					No. of classes taken:	

UNIT-V: TARIFF AND POWER FACTOR IMPROVEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	**Teaching Learning Methods**	HOD Sign Weekly
52	Desirable characteristics	1	30-10-2025		TLM2	
53	Types of Tariff, Flat rate, Block-rate	1	31-10-2025		TLM2	
54	KVA maximum demand	1	01-11-2025		TLM1, TLM2	
55	Time of Day tariff	1	05-11-2025		TLM1, TLM2	
56	Disadvantages of low power factor, Advantages of improved p.f	1	06-11-2025		TLM1, TLM2	
57	Improvement devices , Power factor improvement using static capacitor	1	07-11-2025		TLM1, TLM2	
58	Most economical power factor	1	12-11-2025		TLM2	
59	Location of power factor improvement devices from consumer	1	13-11-2025		TLM1, TLM2	
60	REVISION	1	14-11-2025		TLM1, TLM2	
61	REVISION	1	15-11-2025		TLM1, TLM2	
No. of classes required to complete UNIT-V : 10					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	HOD Sign Weekly
44	Economic aspects in utilization of electrical energy	2	29-10-2025 & 01-11-2025		TLM2, TLM6	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	30-06-2025	23-08-2025	8 W
Technical Training	25-08-2025	06-09-2025	2 W
I Mid Examinations	08-09-2025	13-09-2025	1 W
II Phase of Instructions	15-09-2025	15-11-2025	9 W
II Mid Examinations	17-11-2025	22-11-2025	1 W
Preparation and Practicals	24-11-2025	29-11-2025	1 W
Semester End Examinations	01-12-2025	13-12-2025	2 W

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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1: To apply the fundamental engineering knowledge, computational principles, and methods for extracting knowledge from data to identify, formulate and solve real time problems.

PSO2: To develop multidisciplinary projects with advanced technologies and tools to address social and environmental issues.

PSO3: To provide a concrete foundation and enrich their abilities for Employment and Higher studies in Artificial Intelligence and Data science with ethical values.

Mr A.V.Ravi Kumar	Dr.AV.G.A.Martanda	Dr.M.S.Giridhar	Dr. P. Sobha Rani
Course Instructor	Course Coordinator	Module Coordinator	HOD

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART - A

PROGRAM : B.Tech. - VII-Sem. - CSE – A Section
ACADEMIC YEAR : 2025-26
COURSE NAME & CODE : Management Science for Engineers – 20HS02
L-T-P STRUCTURE : 4-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Mr. V.Sankararao, Sr. Assistant Professor
COURSE COORDINATOR : Dr. A.Nageswara Rao, Sr. Assistant Professor
PER-REQUISITE : NIL

COURSE EDUCATIONAL OBJECTIVES:

1. To make students understand management, its principles, contribution to management, organization, and its basic issues and types.
2. To make students understand the concept of plant location and its factors and plant layout and types, method of production and work study importance.
3. To understand the purpose and function of statistical quality control. And understand the material management techniques.

COURSE OUTCOMES:

After completion of the course student will be able to:
CO1: Understand management principles to practical situations based on the organization structures. **(L2)**
CO2: Design Effective plant Layouts by using work study methods. **(L2)**
CO3: Apply quality control techniques for improvement of quality and materials management. **(L3)**
CO4: Develop best practices of HRM in corporate Business to raise employee productivity. **(L2)**
CO5: Identify critical path and project completion time by using CPM and PERT techniques. **(L3)**

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	3	3	2	3				3			3		3	
CO2	3	3	1	2	1				3			3		3	
CO3	3	3	3	2	1				3			3		3	
CO4	3	2	3	2	3				1			3		3	
CO5	2	3	3	2	1				1			3		3	

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

BOS APPROVED TEXT BOOKS:

1. Dr. A.R.Aryasri, Management Science, TMH, 10th edition, 2012

References:

1. Koontz & weihrich – Essentials of management, TMH, 10th edition, 2015
2. Stoner, Freeman, Gilbert, Management, 6th edition Pearson education, New Delhi, 2004
3. O.P. Khana, Industrial engineering and Management L.S.Srinath, PERT & CPM

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I: INTRODUCTION

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction To Management	1	01.07.2025		TLM1	CO1	T1	
2.	Definition, Nature, Importance of management	1	03.07.2025		TLM1	CO1	T1	
3.	Functions of Management	1	04.07.2025		TLM1	CO1	T1	
4.	Taylor's scientific management theory	1	05.07.2025		TLM1	CO1	T1	
5.	Fayal's principles of management	1	08.07.2025		TLM3	CO1	T1	
6.	Contribution of Elton mayo, Maslow	1	10.07.2025		TLM1	CO1	T1	
7.	Herzberg, Douglas MC Gregor principles of management	1	11.07.2025		TLM1	CO1	T1	
8.	Basic Concepts of Organization, Authority, Responsibility	1	12.07.2025		TLM1	CO1	T1	
9.	Delegation of Authority, Span of control	1	15.07.2025		TLM1	CO1	T1, R1	
10.	Departmentation and Decentralization	1	17.07.2025		TLM1	CO1	T1, R1	
11.	Organization structures (Line organization)	1	18.07.2025		TLM1	CO1	T1, R1	
12.	Line and Functional staff organization,	1	19.07.2025		TLM1	CO1	T1	
13.	Committee and Matrix organization	1	22.07.2025		TLM3	CO1	T1	
No. of classes required to complete UNIT-I		**13**			**No. of classes taken:**			

UNIT-II: OPERATIONS MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
14.	Introduction, Plant location	1	24.07.2025		TLM1	CO2	T1, R3	
15.	Factors influencing location	1	25.07.2025		TLM1	CO2	T1, R3	
16.	Principles of plant layouts	1	29.07.2025		TLM1	CO2	T1, R3	
17.	Types of plant layouts	1	31.07.2025		TLM1	CO2	T1, R3	
18.	Methods of production	1	01.08.2025		TLM1	CO2	T1, R3	
19.		1	02.08.2025		TLM3	CO2	T1, R3	
20.	Work study	1	05.08.2025		TLM1	CO2	T1	
21.		1	07.08.2025		TLM1	CO2	T1	

22.	Basic procedure involved in method study	1	08.08.2025		TLM1	CO2	T1	
23.	Work measurement	1	09.08.2025		TLM3	CO2	T1	
24.	Work measurement	1	12.08.2025		TLM1	CO2	T1	
25.		1	14.08.2025		TLM1	CO2	T1	
No. of classes required to complete UNIT-II		**12**			**No. of classes taken:**			

UNIT-III: STATISTICAL QUALITY CONTROL & MATERIALS MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
26.	Introduction, Concept of Quality, Quality Control functions	1	19.08.2025		TLM1	CO3	T1	
27.	Meaning of SQC, Variables and attributes	1	21.08.2025		TLM1	CO3	T1, R1	
28.	X chart, R Chart	1	22.08.2025		TLM1	CO3	T1, R1	
29.	C Chart, P Chart	1	23.08.2025		TLM1	CO3	T1	
Technical Training 25.08.2025 to 06.09.2025 MID-I 08.09.2025 to 13.09.2025								
30.	Simple problems	1	16.09.2025		TLM3	CO3	T1, R1	
31.	Acceptance sampling, Sampling plans	1	18.09.2025		TLM1	CO3	T1, R1	
32.	Deming's contribution to quality	1	19.09.2025		TLM1	CO3	T1	
33.	Materials management Meaning and objectives	1	20.09.2025		TLM1	CO3	T1, R1	
34.	Inventory control & Need for inventory control	1	23.09.2025		TLM1	CO3	T1, R1	
35.	Purchase procedure, Store records	1	25.09.2025		TLM1	CO3	T1	
36.	EOQ, ABC analysis	1	26.09.2025		TLM3	CO3	T1	
37.	Stock levels	1	27.09.2025		TLM1	CO3	T2	
No. of classes required to complete UNIT-III		**12**			**No. of classes taken:**			

UNIT-IV: HUMAN RESOURCE MANAGEMENT (HRM)

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
38.	Introduction	1	03.10.2025		TLM1	CO4	T1	
39.	Concepts of HRM	1	04.10.2025		TLM1	CO4	T1	
40.	Basic functions of HR manager	1	07.10.2025		TLM1	CO4	T1, R2	

41.	Man power planning	1	09.10.2025		TLM3	CO4	T1, R2	
42.	Recruitment	1	10.10.2025		TLM1	CO4	T1, R2	
43.	Selection,	1	11.10.2025		TLM1	CO4	T1, R1	
44.	Training & developmemt	1	14.10.2025		TLM1	CO4	T1, R1	
45.	Placement	1	16.10.2025		TLM1	CO4	T1	
46.	Wage and salary administration	1	17.10.2025		TLM3	CO4	T1, R1	
47.	Promotion, Transfers Separation	1	18.10.2025		TLM1	CO4	T1, R1	
48.	Performance appraisal	1	23.10.2025		TLM1	CO4	T1	
49.	Job evaluation and merit rating	1	24.10.2025		TLM3	CO4	T1	
No. of classes required to complete UNIT-IV		**12**			**No. of classes taken:**			

UNIT-V: PROJECT MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
50.	Introduction	1	25.10.2025		TLM1	CO5	T1,R2	
51.	Early techniques in project management	1	28.10.2025		TLM1	CO5	T1, R2	
52.	Network analysis	1	30.10.2025		TLM1	CO5	T1,R2	
53.	Programme Evaluation and Review Technique (PERT)	1	31.10.2025		TLM1	CO5	T1,R2	
54.	Problems	1	01.11.2025		TLM1	CO5	T1,R2	
55.	Critical path method (CPM)	1	04.11.2025		TLM1	CO5	T1, R2	
56.	Identifying critical path	1	06.11.2025		TLM1	CO5	T1,R2	
57.	Problems	1	07.11.2025		TLM1	CO5	T1,R2	
58.	Probability of completing project within given time	1	08.11.2025		TLM1	CO5	T1,R2	
59.	Project cost analysis	1	11.11.2025		TLM1	CO5	T1, R2	
60.	Problems	1	13.11.2025		TLM1	CO5	T1,R2	
61.	project crashing	1	14.11.2025		TLM1	CO5	T1,R2	
62.	Simple problems	1	15.11.2025		TLM1	CO5	T1,R2	
No. of classes required to complete UNIT-V		**13**			**No. of classes taken:**			

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

Part – C

EVALUATION PROCESS:

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1: Pursue higher education, entrepreneurship and research to compete at global level.

PEO2: Design and develop products innovatively in the area of computer science and engineering and in Other allied fields.

PEO3: Function effectively as individuals and as members of a team in the conduct of interdisciplinary Projects and even at all the levels with ethics and necessary attitude.

PEO4: Serve ever-changing needs of the society with a pragmatic perception.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

PO1 - Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 - 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.

PO3 - 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.

PO4 - 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.

PO5 - 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.

PO6 - 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.
PO7 - 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.
PO8 - Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9 - Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10 - 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.
PO11 - Project Management and Finance: Demonstrate knowledge and understanding of the ring and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12 - 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.

PROGRAM SPECIFIC OUTCOMES (PSOS):

PSO1: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.
PSO2: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3: To inculcate an ability to analyze, design and implement database applications.

Mr. V. Sankararao	Dr. A. Nageswara Rao	Mr. J. Subba Reddy	Dr. M.B.S.Sreekara Reddy
Course Instructor	Course Coordinator	Module Coordinator	HoD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
ISO 21001:2018,14001:2015,50001:2018 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: Ms. B. Usha Rani
Course Name & Code : Continuous Integration and Continuous Delivery using DevOps(20CSS4)
L-T-P Structure : 1-0-2 **Credits:** 2
Program/Sem/Sec : B.Tech., CSE, VII-Sem., Section – A. **A.Y.:** 2025-26

PRE-REQUISITE: Basic knowledge of certain basic programming languages such as Java, and Python.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

This course is designed to provide the core education necessary to build your DevOps vocabulary and to understand its principles and practices. With the help of key DevOps concepts and terminology, real-life case studies, examples and interactive group discussions and exercises, you will acquire a fundamental understanding of DevOps.

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

CO1	Understand the why, what, and how of DevOps adoption(**Understand – L2**)
CO2	Attain literacy on DevOps(**Apply L3**)
CO3	Align capabilities required in the team and create an automated CICD pipeline using a stack of tools(**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	1	-	2	-	2	-	-	-	-	-	2	2	3	-	-
CO2	1	-	2	-	2	-	-	-	-	-	2	2	3	-	-
CO3	1	-	2	-	2	-	-	-	-	-	2	2	3	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1- Low **2** –Medium **3-** High

REFERENCE BOOKS:

R 1	Learning Continuous Integration with Jenkins: A beginner's guide to implementing Continuous Integration and Continuous Delivery using Jenkins - Nikhil Pathania ,Packt publication[https://www.amazon.in/Learning-Continuous-Integration-JenkinsPathania/dp/1785284835]
R 2	Jenkins 2 – Up and Running: Evolve Your Deployment Pipeline for Next Generation Automation - Brent Laster, O'Reilly publication [https://www.amazon.in/Jenkins-2- Running-Brent-Laster/dp/1491979593]
R 3	https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fapp%2Ftoc%2Flex_auth_013382690411003904735_shared%2Foverview[Software Engineering and Agile software development]
R 4	https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fviewer%2Fhtml%2Flex_auth_013501578194976768104 67[Development & Testing with Agile: Extreme Programming]
R 5	https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fviewer%2Fhtml%2Flex_auth_013538989171924992269_shared[DevOps CICD]

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	04-07-2025		**DM5**	
2.	Module-2	6	11-07-2025 18-07-2025		**DM5**	
3.	Module-3	6	25-07-2025 01-08-2025		**DM5**	
4.	Module-4	6	22-08-2025 19-09-2025		**DM5**	
5.	Module-5	3	26-09-2025		**DM5**	
6.	Module-6	3	10-10-2025		**DM5**	
7.	Module-7	3	19-09-2025		**DM5**	
8.	Module-8	3	26-09-2025		**DM5**	
9.	Module-9	3	10-10-2025		**DM5**	
10.	Module-10	6	17-10-2025 24-10-2025		**DM5**	
11.	Module-11	3	31-10-2025		**DM5**	
12.	Module-12	3	07-11-2025		**DM5**	
13.	External exam	3				

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

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	Ms. B. Usha Rani	Mr. S. Srinivasa Reddy	Dr. Y. V. B. Reddy	Dr. S. Nagarjuna Reddy
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: M Gayathri
Course Name & Code : Cloud Computing & 20CS24
L-T-P Structure : **3-0-0** **Credits:** 3
Program/ Sem /Sec : B. Tech/VII/B **A.Y.:** 2025-26

PREREQUISITES : **Computer Networks, and Operating Systems**

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of the course is to introduce the concepts of evolving computer model, cloud computing, levels of services that can be achieved by cloud. and security aspects in the cloud.

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

CO1	Illustrate the key dimensions of the challenge of Cloud Computing **(Understand – L2)**
CO2	Classify the Levels of Virtualization and mechanism of tools. **(Understand – L2)**
CO3	Analyze Cloud infrastructure including Google Cloud and Amazon Cloud. **(Analyze – L4)**
CO4	Create Combinatorial Auctions for cloud resource and design scheduling algorithms for computing cloud. **(Apply – L3)**
CO5	Assess control storage systems and cloud security, the risks involved its impact and develop cloud application **(Analyze – L4)**

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	-	-	-	-	-	-	-	-	-	-	1	-
CO2	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
CO3	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
CO4	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
CO5	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
1 - Low				**2** –Medium									**3** – High		

TEXTBOOKS:

T1 Distributed and Cloud Computing, Kai Hwang, Geoffry C. Fox, Jack J. Dongarra MK Elsevier.(**UNIT-1,2&3**)

T2 Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier**.(UNIT-4&5)**

REFERENCE BOOKS:

R1 Cloud Computing, A Hands on approach, Arshadeep Bahga, Vijay Madisetti, University Press

R2 Cloud Computing, A Practical Approach, Anthony T Velte, Toby J Velte, Robert Elsenpeter, TMH

R3 Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christen vecctiola, S Tammaraiselvi, TMH

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Systems Modelling, Clustering and Virtualization

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 Course and COs**	1	30/06/2025		TLM1,2	
2.	**Introduction to Unit-I**	1	01/07/2025		TLM1,2	
3.	**Scalable Computing over the Internet**	3	02/07/2025 04/07/2025 05/07/2025		TLM1,2	
4.	**Technologies for Network Based Systems**	3	07/07/2025 08/07/2025 09/07/2025		TLM1,2	
5.	**System models for Distributed and Cloud Computing**	2	11/07/2025 14/07/2025		TLM1,2	
6.	**Performance, Security and Energy Efficiency**	3	15/07/2025 16/07/2025 18/07/2025		TLM1,2	
7.	**Activity / Assignment**	1	19/07/2025		TLM1,2	
No. of classes required to complete UNIT-I: 14				**No. of classes taken:**		

UNIT-II: Virtual Machines and Virtualization of Clusters and Data Centres

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.	**Implementation Levels of Virtualization**	3	21/07/2025 22/07/2025 23/07/2025		TLM1,2	
2.	**Virtualization Structures/ Tools and Mechanisms**	3	25/07/2025 28/07/2025 29/07/2025		TLM1,2	
3.	**Virtualization of CPU, Memory and I/O Devices**	3	30/07/2025 01/08/2025 02/08/2025		TLM1,2	
4.	**Virtual Clusters and Resource Management**	3	04/08/2025 05/08/2025 06/08/2025		TLM1,2	
5.	**Virtualization for Data-Center Automation.**	3	08/08/2025 11/08/2025 12/08/2025		TLM1,2	
6.	**Activity / Assignment**	1	13/08/2025		TLM1,2	
No. of classes required to complete UNIT-II: 16				**No. of classes taken:**		

UNIT-III: Cloud Platform Architecture

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.	**Cloud Computing and Service Models**	3	16/08/2025 18/08/2025 19/08/2025		TLM1,2	
2.	**Public Cloud Platforms**	2	20/08/2025 22/08/2025		TLM1,2	
3.	**Service Oriented Architecture**	2	23/08/2025 25/08/2025		TLM1,2	
MID EXAMINATION-I 08-09-2024 to 13-09-2024						
4.	**Programming on Amazon AWS**	2	15/09/2025 16/09/2025		TLM1,2	
5.	**Programming on Microsoft Azure**	3	17/09/2025 19/09/2025 20/09/2025		TLM1,2	
6.	**Activity/ Assignment**	1	22/09/2025			
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

UNIT-IV: Cloud Resource Management and Scheduling

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.	**Policies and Mechanisms for Resource Management**	2	23/09/2025		TLM1,2	
2.	**Applications of Control Theory to Task Scheduling on a Cloud**	2	24/09/2025 26/09/2025		TLM1,2	
3.	**Stability of a Two-Level Resource Allocation Architecture**	2	27/09/2025 06/10/2025		TLM1,2	
4.	**Feedback Control Based on Dynamic Thresholds**	1	07/10/2025		TLM1,2	
5.	**Coordination of Specialized Autonomic Performance Managers**	2	08/10/2025 10/10/2025		TLM1,2	
6.	**Resource Bundling**	1	13/10/2025		TLM1,2	
7.	**Scheduling Algorithms for Computing Clouds**	2	14/10/2025 15/10/2025		TLM1,2	
8.	**Fair Queuing**	2	17/10/2025 18/10/2025		TLM1,2	
9.	**Start Time Fair Queuing**	2	20/10/2025 21/10/2025		TLM1,2	
10.	**Activity / Assignment**	1	22/10/2025			
No. of classes required to complete UNIT-IV: 17				**No. of classes taken:**		

UNIT-V: Storage Systems

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.	**Evolution of storage technology**	1	24/10/2025		TLM1,2	
2.	**Storage models, file systems and database**	1	25/10/2025		TLM1,2	
3.	**Distributed file systems**	2	27/10/2025 28/10/2025		TLM1,2	
4.	**General parallel file systems**	3	01/11/2025 03/11/2025 04/11/2025		TLM1,2	
5.	**Google file system**	3	08/11/2025 10/11/2025 11/11/2025		TLM1,2	
6.	**Activity/ Assignment**	1	12/11/2025			
7.	**Revision**	2	14/11/2025 15/11/2025			
No. of classes required to complete UNIT-V: 13				**No. of classes taken:**		
MID EXAMINATION – II 17.11.2024 to 22.11.2024						

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.	**Building and hosting a simple cloud application using Google App Engine**	2	29/10/2025 31/10/2025		TLM1,2	
2.	**Hosting a simple cloud application using Microsoft Azure**	2	05/11/2025 07/11/2025		TLM1,2	

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

PEVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of 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.
PO10	**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.
PO11	**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.
PO12	**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	M. Gayathri	M. Gayathri	Dr. Venkata Subbaiah	Dr. S. Nagarjuna Reddy
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs B.Nirosha
Course Name & Code : NATURAL LANGUAGE PROCESSING-20AD09
L-T-P Structure : **3-0-0** **Credits:** 03
Program/Sem/Sec : B.Tech-CSE / VII SEM/B-Sec
A.Y. : 2025-26

PRE-REQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of the course is to make learn the basic elements of C programming, control structures, derived data types, Modular programming, user defined structures, basics of files and its I/O operations.

CO1	Familiar with the basic components of NLP. **(Understand - L2)**
CO2	Applying N-gram models to predict a sequence of text. **(Apply - L3)**
CO3	Build a basic language understanding system using preliminary concepts of NLTK library. **(Apply - L3)**
CO4	Exposure on advanced techniques for understanding patterns in text **(Apply-L3)**
CO5	Understand the semantics of linguistic components in a natural dialogue **(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	2	2	-	-	3	-	-	-	-	-	-	2	2	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	-	3	-	3	-	-	-	-	-	-	-	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).

TEXTBOOKS:

1. Daniel Jurafsky, James H. Martin ,"Speech and Language Processing" , Third Edition, PHI, 2020.
2. https://realpython.com/nltk-nlp-python/#getting-text-to-analyze

REFERENCE BOOKS:

1. Natural Language Processing with Python: Analysing Text with the Natural Language Toolkit, Steven Bird, Ewan Klein, 2011
2. Applied Text Analysis with Python: Enabling Language-Aware Data Products with Machine Learning, Benjamin Bengfort, Rebecca Bilbro, 2018
3. Speech and Language Processing, 2nd Edition, Daniel Jurafsky, James H. Martin, 2009

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	Learning Outcomes	HOD Sign Weekly
1	Introduction to NLP	1	30-06-2025		**TLM1**	CO1	
2	Knowledge in Speech and Language Processing	2	02-07-2025 03-07-2025		**TLM1**	CO1	
3	Ambiguity; Models and Algorithms	2	04-07-2025 05-07-2025		**TLM1**	CO1	
4	Language, Thought and Understanding;	2	07-07-2025 09-07-2025		**TLM1**	CO1	
5	History Regular Expressions Regular Expression	2	10-07-2025 11-07-2025		**TLM1**	CO1	
6	Words; Corpora;	2	12-07-2025 14-07-2025		**TLM1**	CO1	
7	Text Normalization	2	16-07-2025 17-07-2025		**TLM1**	CO1	
8	Minimum Edit Distance	2	18-07-2025 19-07-2025		**TLM1**	CO1	
9	Unit-I Assignment Test	1	21-07-2025		**TLM1**	CO1	
No. of classes required to complete UNIT-I		16	No. of classes taken:				

UNIT-II: N-gram Language Models

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
10	N-Grams; Evaluating Language Models	2	23-07-2025 24-07-2025		TLM1	CO2	
11	Generalization and Zeros.	2	25-07-2025 28-07-2025		TLM1	CO2	
12	Smoothing: Laplace Smoothing	2	30-07-2025 31-07-2025		TLM1	CO2	
13	Add-k Smoothing	2	01-08-2025 02-08-2025		TLM1	CO2	
14	Backoff and Interpolation	2	04-08-2025 06-08-2025		TLM1	CO2	
15	Kneser-Ney Smoothing	2	07-08-2025 08-08-2025		TLM1	CO2	
16	Unit-II Assignment Test	1	09-08-2025		TLM1	CO2	
No. of classes required to complete UNIT-2		13	No. of classes taken:				

UNIT – III: Natural language processing tools in Python (NLTK Package)

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
17	Part-I: Introduction to NLTK	2	11-08-2025 13-08-2025		**TLM1**	CO3	
18	Tokenizing; Filtering Stop words; Stemming	2	14-08-2025 18-08-2025		**TLM1**	CO3	
19	Tagging parts of speech; Lemmatizing;	2	20-08-2025 21-08-2025		**TLM1**	CO3	
20	Chunking	2	22-08-2025 23-08-2025		**TLM1**	CO3	
21	Chinking Part-II: Using Named Entity Recognition (NER)	2	15-09-2025 17-09-2025		**TLM1**	CO3	
22	Getting Text to Analyze	2	18-09-2025 19-09-2025		**TLM1**	CO3	
23	Using a Concordance	2	20-09-2025 22-09-2025		**TLM1**	CO3	
24	Making a Dispersion Plot.	2	24-09-2025 25-09-2025		**TLM1**	CO3	
25	Unit-III Assignment Test	1	26-09-2025		**TLM1**	CO3	
No. of classes required to complete UNIT-3		17	No. of classes taken:				

UNIT-IV: Information Extraction

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
26	Relation Extraction Algorithms	2	27-09-2025 03-10-2025		TLM1	CO4	
27	Using Patterns to extract relations	2	04-10-2025 06-10-2025		TLM1	CO4	
28	Relation extraction via supervised learning	2	08-10-2025 09-10-2025		TLM1	CO4	
29	Semi supervised relation extraction via bootstrapping	2	10-10-2025 11-10-2025		TLM1	CO4	
30	Distant Supervision for Relation Extraction	2	13-10-2025 15-10-2025		TLM1	CO4	
31	Evaluation of Relation Extraction	2	16 -10-2025		TLM1	CO4	
32	Extracting Times	2	17-10-2025		TLM1	CO4	
33	Extracting Events and their Times; Template Filling	2	18-10-2025 20-10-2025		TLM1	CO4	
34	Unit-IV Assignment Test	1	22-10-2025		TLM1	CO4	
No. of classes required to complete UNIT-4		17	No. of classes taken:				

UNIT-V: Word Senses and WordNet

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
35	Defining Word Senses, How many senses do words have	3	23-10-2025 24-10-2025 25-10-2025		TLM1	CO5	
36	Relations between senses	3	27-10-2025 29-10-2025 30-10-2025		TLM1	CO5	
37	WordNet: Sense relations in WordNet	3	31-10-2025 01-11-2025 03-11-2025		TLM1	CO5	
38	Word Sense Disambiguation	2	05-11-2025 06-11-2025		TLM1	CO5	
39	Alternate WSD algorithms and Tasks	2	07-11-2025 08-11-2025		TLM1	CO5	
40	Alternate WSD algorithms and Tasks	2	10-11-2025 12-11-2025		TLM1	CO5	
41	Unit-V Assignment Test	1	13-11-2025		TLM1	CO5	
42	Revision	1	14-11-2025				
No. of classes required to complete UNIT-5		17	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.Nirosha	Mrs. B.Swathi	Dr K.Devi Priya	Dr. S.Nagarjuna Reddy
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mrs B.USHA RANI
Course Name & Code : BLOCKCHAIN TECHNOLOGIES (20CS29)
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., VII-B A.Y: 2025-26

PRE-REQUISITE: Information Security

COURSE EDUCATIONAL OBJECTIVES (CEOs):

To understand block chain technology and Crypto currency works.

COURSE OUTCOMES (COs): After the completion of the course, student will be able to

CO 1	Demonstrate the block chain basics, Crypto currency. (UnderstandL2)
CO 2	Compare and contrast the use of different private vs. public block chain and use cases (Understand-L2)
CO 3	Design an innovative Bit coin Block chain and scripts, Block chain Science on varies coins (Apply-L3)
CO 4	Classify Permission Block chain and use cases Hyper ledger, Corda(Analyze-L4)
CO 5	Use of Block-chain in E-Governance, Land Registration, Medical Information Systems and others (Apply-L3)

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	-	-	-	-	-	-	-	-	-	2	-
CO2	3	2	1	1	-	-	-	-	-	-	-	1	-	2	-
CO3	2	3	1	1	-	-	-	-	-	-	-	-	-	2	-
CO4	3	2	1	-	-	-	-	-	-	-	-	-	-	2	-
CO5	1	3	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: Block chain Blue print for Economy by Melanie Swan

REFERENCE BOOKS:

Block chain Basics: A Non-Technical Introduction in 25 Steps 1st Edition, by Daniel Drescher.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section B

UNIT-I :

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	2	30-06-2025 30-06-2025		TLM1	
2.	basic ideas behind block chain	1	02-07-2025		TLM1	
3.	how it is changing the landscape of digitalization	1	04-07-2025		TLM1	
4.	introduction to cryptographic concepts required	2	05-07-2025 07-07-2025		TLM1	
5.	Block chain or distributed trust	2	07-07-2025 09-07-2025		TLM1	
6.	Currency	1	11-07-2025		TLM1	
7.	Cryptocurrency	1	12-07-2025 14-07-2025		TLM1	
8.	How a Cryptocurrency works	2	14-07-2025 16-07-2025		TLM1	
9.	Financial services	1	18-07-2025		TLM1	
10.	Bitcoin prediction markets.	2	19-07-2025 21-07-2025		TLM1	
11.	Tutorial-I	1	21-07-2025		TLM1	
No. of classes required to complete UNIT-I		**16**		**No of classes taken**		

UNIT-II:

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.	Hashing	1	23-07-2025		TLM1	
13.	public key cryptosystems	2	25-07-2025 28-07-2025		TLM1	
14.	private vs public block chain and use cases	1	28-07-2025		TLM1	
15.	Hash Puzzles,	1	30-07-2025		TLM1	
16.	Extensibility of Block chain concepts	2	01-08-2025 02-08-2025		TLM1	
17.	Digital Identity verification	1	04-08-2025		TLM1	

18.	Block chainNeutrality	1	04-08-2025		TLM1	
19.	Digital art	1	06-08-2025		TLM1	
20.	Block chain Environment	2	08-08-2025 11-08-2025		TLM1	
21.	Tutorial-II	1	11-08-2025		TLM1	
No. of classes required to complete UNIT-II		**13**		**No of classes taken**		

UNIT-III:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Bitcoin Block chain and scripts	1	13-08-2025		TLM1	
23.	Use cases of Bitcoin Blockchain scripting language in micropayment	2	18-08-2025 18-08-2025		TLM1	
24.	escrow etc Downsideof Bit coin mining	2	20-08-2025 22-08-2025		TLM1	
25.	Block chain Science: Gridcoin	2	23-08-2025 15-09-2025		TLM1	
26.	Folding coin	1	15-09-2025		TLM1	
27.	Block chain Genomics	1	17-09-2025		TLM1	
28.	Bit coin MOOCs	1	19-09-2025		TLM1	
29.	Tutorial-III	1	20-09-2025		TLM3	
No. of classes required to complete UNIT-III		**11**		**No of classes taken**		

UNIT-IV:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
30.	Ethereum continued	2	22-09-2025 22-09-2025		TLM1	
31.	IOTA	1	24-09-2025		TLM1	
32.	The real need for mining	1	26-09-2025		TLM2	
33.	consensus	1	27-09-2025		TLM1	
34.	Byzantine Generals Problem	1	29-09-2025		TLM2	
35.	Consensus as a distributed	2	29-09-2025 06-10-2025		TLM1	

	coordination problem					
36.	Coming to private or permissioned block chains	2	06-10-2025 08-10-2025		TLM2	
37.	Introduction to Hyper ledger	1	10-10-2025		TLM1	
38.	Currency & Token	1	13-10-2025		TLM1	
39.	Campus coin	1	13-10-2025		TLM2	
40.	Coin drop as a strategy for Public adoption	2	15-10-2025 17-10-2025		TLM1	
41.	Currency Multiplicity	1	18-10-2025 20-10-2025		TLM2	
42.	Demurrage currency	2	20-10-2025 22-10-2025		TLM1	
43.	Tutorial-IV	1	24-10-2025		**TLM3**	
No. of classes required to complete UNIT-IV		**19**		**No of classes taken**		

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
44.	Technical challenges	1	25-10-2025		TLM1	
45.	Business model challenges	2	27-10-2025 27-10-2025		TLM2	
46.	Scandals and Publicperception	2	29-10-2025 31-10-2025		TLM1	
47.	Government Regulations	2	01-11-2025 03-11-2025		TLM2	
48.	Uses of Block chain in E-Governance	1	05-11-2025		TLM1	
49.	Land Registration	1	07-11-2025		TLM1	
50.	Medical Information Systems.	1	10-11-2025 10-11-2025		TLM2	
51.	Tutorial – V / Quiz - V	1	12-11-2025		TLM3	
52.	Discussion about SEEpaper	2	14-11-2025 15-11-2025		TLM3	
No. of classes required tocomplete UNIT-V		**13**		**No of classes taken**		

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

PART-C

EVALUATION PROCESS (R20 Regulations):

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

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 comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
Mrs. B. Usha Rani	Dr. K. Phani Phaneendra	Dr D Venkata Subbaiah	Dr. S. Nagarjuna Reddy

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DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr C Rajamallu

Course Name & Code : **BASICS OF CIVIL ENGINEERING & 20CE81**

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

Program/Sem/Sec : B.Tech., CSE., VII-Sem., Sections- B&C A.Y: 2025-26

PRE-REQUISITE: Nil

COURSE OBJECTIVES: This course deals with the importance of building planning, properties and applications of various building materials, soil classification and different types of foundations, important aspects of surveying, levelling operations and identify the terminology in roadway and railway networks, principles of water resources and environmental engineering.

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

CO 1	Understand the importance of building planning for construction. (Understand-L2)
CO 2	Identify the uses and characteristics of different building materials. (Remember-L1)
CO 3	Understand the different types of soils and foundations required for specific usage. (Understand-L2)
CO 4	Differentiate the basics of surveying and levelling operations for field application and categorize the important elements of roadway and railway networks (Understand-L2)
CO 5	Understand the importance of quantity and quality aspects of water in the society (Remember-L1)

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

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

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

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

TEXT BOOKS:

T1 M.S Palanichamy "Basic Civil Engineering", Tata McGraw Hill Publishing 2000.

REFERENCE BOOKS:

R1 S S Bhavikatti "Basic Civil Engineering", New age International Publications, 2010

R2 C P Kaushik& S S Bhavikatti "Basic Civil Engineering ", New age International

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Building Planning

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 and course outcomes	1	30-05-2025		TLM2	
2.	Building Planning- Role of a Civil Engineer	1	01-07-2025		TLM2	
3.	Inter connection among specializations in Civil Engineering	1	02-07-2025		TLM2	
4.	Elements of a Building, Basic Requirements of a Building	1	05-07-2025		TLM2	
5.	Planning- Hot and dry climates	1	06-07-2025		TLM2	
6.	Hot and wet climates, Cold climatic conditions	1	11-07-2025		TLM2	
7.	Grouping, Privacy, circulation	1	12-07-2025		TLM2	
8.	Sanitation and ventilation	1	13-07-2025		TLM2	
9.	Orientation, Economy,	1	18-07-2025		TLM2	
10.	Role of Bye-laws	1	19-07-2025		TLM2	
No. of classes required to complete UNIT-I:				No. of classes taken		

UNIT-II: Building Materials

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.	Building Materials -Classification	1	20-07-2025		TLM2	
2.	Rocks - Composition, Properties, Commercial forms, Uses	1	23-07-2025		TLM2	
3.	Bricks - Composition, Properties, Commercial forms, Uses	1	21-07-2025		TLM2	
4.	Timber, Ply wood - Classification, Composition, Properties, Commercial forms	1	25-07-2025		TLM2	
5.	Glass-Classification, Composition, Properties, Commercial forms,	1	26-08-2025		TLM2	
6.	Bitumen- Classification, Composition, Properties, Commercial forms,	1	30-09-2025		TLM2	
7.	Aluminium, Cement Classification, Composition, Properties, Commercial forms,	1	01-09-2025		TLM2	

8.	Steel, Concrete Classification, Composition, Properties, Commercial forms, Uses	1	01-09-2025		TLM2	
9.	Mortar Classification, Composition, Properties, Commercial forms, Uses	1	02-09-2025		TLM2	
10.	Concept of eco-friendly materials, examples	1	02-09-2025		TLM2	
No. of classes required to complete UNIT-II:				No. of classes taken:		

UNIT-III: SOIL CLASSIFICATION AND FOUNDATION

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.	Types of soils, soil classification	1	03-09-2025		TLM2	
2.	Engineering properties	1	06-09-2025		TLM2	
3.	Bearing Capacity of soil, purpose and methods of improving bearing capacity	1	6-09-2025		TLM2	
4.	MID-1	08-09-2025 to 13-09-2025				
5.	Foundations – Requirements	1	15-09-2025		TLM2	
6.	Foundations - Loads, Types	1	16-09-2025		TLM2	
7.	Foundations for special structures-water tanks-	1	17-09-2025		TLM2	
8.	Foundations for special structures-silos, chimneys	1	20-09-2025		TLM2	
9.	Foundations for special structures-transmission line towers- cooling towers,	1	22-09-2025		TLM2	
10.	Foundations for special structures-telecommunication towers	1	23-09-2025		TLM2	
No. of classes required to complete UNIT-III:				No. of classes taken:		

UNIT-IV : SURVEYING, LEVELLING & HIGHWAY NETWORK

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.	Objective of surveying– Principles, applications and uses of - chain surveying	1	24-09-2025		TLM2	
2.	Principles, applications and uses of Theodolite, levelling	1	27-09-2025		TLM2	
3.	Principles, applications and uses of contour maps, Planimeter	1	06-10-2025		TLM2	
4.	Assignment	1	07-10-2025		TLM2	
5.	EDM Concept - Linear distance and area measurement	1	08-10-2025		TLM2	
6.	Total station- GIS-Concept and applications in civil engineering.	1	11-10-2025		TLM2	
7.	Tutorial	1	13-10-2025		TLM2	
8.	Indian highways- Basic terminology- Classification of roads - PIEV theory	1	14-10-2025		TLM2	
9.	Traffic signs - IRC Code provisions	1	15-10-2025			

10.	Indian railways –Permanent way and components of railway track	1	18-10-2025		TLM2	
11.	Gauges – rails -sleepers – ballast.	1	21-10-2025		TLM2	
No. of classes required to complete UNIT-IV:				No. of classes taken:		

UNIT-V: WATER RESOURCES AND ENVIRONMENTAL ENGINEERING

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.	Objectives of water supply system-Sources of water supply-Hydrologic cycle	1	27-10-2025		TLM2	
2.	Rainfall measurement - Purpose of dams, reservoirs, intakes, infiltration galleries	1	28-10-2025		TLM2	
3.	Water demands –Water quality parameters and their impacts - Principles of water treatment	1	29-10-2025		TLM2	
4.	Objectives and methods of water distribution systems – Sewage generation in a society –	1	01-11-2025		TLM2	
5.	Wastewater characteristics and their impacts	1	05-11-2025		TLM2	
6.	Principles of sewage treatment	1	08-11-2025		TLM2	
7.	Disposal of sewage	1	10-11-2025		TLM2	
8.	Water quality standards for – drinking purpose,	1	11-11-2025		TLM2	
9.	Water quality standards for irrigation,	1	12-11-2025		TLM2	
10.	**MID-2**	**17-11-2025 to 22-11-2025**				
No. of classes required to complete UNIT-V:				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
PEO 2	To adapt to the modern engineering tools for planning, analysis, design, implementation of analytical data and assess their relevant significance in societal and legal issues necessary in their professional career.
PEO 3	To exhibit professionalism, ethical attitude, communication, managerial skills, team work and social responsibility in their profession and adapt to current trends by engaging in continuous learning.

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 problem
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 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 analyse the various laboratory tests required for the professional demands.
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain.

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr C Rajamallu)	(Mr.PM Ganga Raju)	(Dr C Rajamallu)	(Dr. KV Ramana)

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mrs.R. Padma
Course Name & Code : Utilization of Electrical Energy & 20EE83
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech, CSE-B., VII-Sem. A.Y : 2025-26

Pre-requisites : --NIL

Course Educational Objective: This course enables the student to familiarize with characteristics of various drives, comprehend the different issues related to heating, welding and illumination.

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

CO 1	Understand mechanism of electric heating and electric welding**(Understanding –L2)**
CO 2	Analyze performance of various lighting schemes**(Understanding –L2)**
CO 3	Analyze the performance of electric drive systems**(Understanding –L2)**
CO 4	Illustrate the different schemes of traction and its main components **(Understanding –L2)**
CO5	Understand various tariff methods and power factor improvement techniques **(Understanding –L2)**

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 a	PSO b	PSO c
CO1	2	2	2												
CO2	2	2	2								2				
CO3	2	2	2												
CO4	2	2	2								2				
CO5	2	2	2								2				

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

TEXT BOOKS:

T1: C.L.Wadhwa "Generation, Distribution and Utilization of Electrical energy, New Age International Publishers,3rd Edition,2015.

T2: N.V.Suryanarayana "Utilization of electric power including electric drives and electric traction, New age international publishers New Delhi,2nd edition 2014.

REFERENCE BOOKS:

R1: Art & Science of Utilization of electrical Energy, Partab, Dhanpat Rai & Co., 2004.
R2: Utilization of Electric Energy, E. Openshaw Taylor and V. V. L. Rao, Universities Press, 2009.

Part - B
COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I : ELECTRIC HEATING &WELDING

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, CEO's &CO's	1	01-07-2025		TLM1	
2.	Advantages &applications of Electric heating	1	03-07-2025		TLM2	
3.	Classification of electric heating	1	04-07-2025		TLM2	
4.	Resistance heating	1	05-07-2025		TLM2	
5.	Arc heating	1	08-07-2025		TLM2	
6.	Induction heating	1	10-07-2025		TLM2	
7.	dielectric heating	1	11-07-2025		TLM2	
8.	Causes of failures of heating elemdents	1	15-07-2025		TLM2, TLM6	
9.	Materials for heating elements	1	17-07-2025		TLM2, TLM6	
10.	Requirement of good heating material	1	18-07-2025		TLM2	
11.	ARC Furnace	1	19-07-2025		TLM2, TLM4	
12.	Resistance welding	1	22-07-2025		TLM2	
13.	Spot welding,seam welding	1	24-07-2025		TLM2, TLM4	
14.	,Arc welding	1	25-07-2025		TLM2, TLM4	
15.	Comparision between AC and DC welding	1	26-07-2025		TLM2, TLM6	
No. of classes required to complete UNIT-I : 15					No. of classes taken:	

UNIT-II : ILLUMINATION ENGINEERING

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	Introduction	1	29-07-2025		TLM1	
17	Nature of light	1	31-07-2025		TLM2	
18	Laws of illumination	1	01-08-2025		TLM1	
19	Laws of illumination	1	02-08-2025		TLM1	
20	Lighting schemes, sources of light	1	05-08-2025		TLM2	
21	Fluorescent Lamp, CFL and LED	1	07-08-2025		TLM1, TLM4	
22	Sodium Vapor Lamp	1	08-08-2025		TLM1, TLM4	
23	Neon lamps	1	12-08-2025		TLM1, TLM2	
24	mercury vapor lamps	1	14-08-2025		TLM1, TLM2	

25	Comparision between tungsten &fluroscent tubes	1	16-08-2025		TLM1, TLM2	
26	Requirements of good lighting	1	19-08-2025		TLM2, TLM6	
27	Street lighting	1	21-08-2025		TLM2	
28	Assignment/Quiz	1	22-08-2025		TLM1	
No. of classes required to complete UNIT-II : 13					No. of classes taken:	

UNIT-III: ELECTRIC DRIVES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
29	Introduction	1	23-08-2025		TLM2	
30	Elements of drive, advantages	1	16-09-2025		TLM2	
31	Factors affecting selection of motor	1	18-09-2025		TLM2	
32	Types of loads	1	19-09-2025		TLM2	
33	Industrial applications	1	20-09-2025		TLM1, TLM2	
34	Transient Characteristics of drives	1	23-09-2025		TLM1, TLM2	
35	Steady state characteristics of drives	1	25-09-2025		TLM1, TLM2	
36	Size of motor	1	26-09-2025		TLM1, TLM2	
37	Load Equalization	1	27-09-2025		TLM2	
38	Industrial applications Assignment/Quiz	1	03-10-2025		TLM1, TLM2	
No. of classes required to complete UNIT-III : 10					No. of classes taken:	

UNIT-IV : ELECTRIC TRACTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
39	Introduction	1	04-10-2025		TLM2	
40	Requirement of an ideal traction system	1	07-10-2025		TLM2	
41	Supply system for electric traction	1	09-10-2025		TLM2	
42	Train movement	1	10-10-2025		TLM2	
43	mechanism of train movement	1	14-10-2025		TLM2	
44	Traction motors	1	16-10-2025		TLM1, TLM2	
45	Modern trends in electric traction	1	17-10-2025		TLM2, TLM6	
46	Automation in traction	1	18-10-2025		TLM1, TLM2	
47	Speed time curves for different services	1	21-10-2025		TLM1, TLM2	

48	Trapezoidal speed time curves	1	23-10-2025		TLM1, TLM2	
49	Quadrilateral speed time curves	1	24-10-2025		TLM1	
50	Problems on train movement	1	25-10-2025		TLM1	
51	Assignment/quiz	1	28-10-2025		TLM2	
No. of classes required to complete UNIT-IV : 13					No. of classes taken:	

UNIT-V: TARIFF AND POWER FACTOR IMPROVEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	**Teaching Learning Methods**	HOD Sign Weekly
52	Desirable characteristics	1	30-10-2025		TLM2	
53	Types of Tariff, Flat rate, Block-rate	1	31-10-2025		TLM2	
54	KVA maximum demand	1	01-11-2025		TLM1, TLM2	
55	Time of Day tariff	1	04-11-2025		TLM1, TLM2	
56	Disadvantages of low power factor, Advantages of improved p.f	1	06-11-2025		TLM1, TLM2	
57	Improvement devices , Power factor improvement using static capacitor	1	07-11-2025		TLM1, TLM2	
58	Most economical power factor	1	11-11-2025		TLM2	
59	Location of power factor improvement devices from consumer	1	13-11-2025		TLM1, TLM2	
60	REVISION	1	14-11-2025		TLM1, TLM2	
61	REVISION	1	15-11-2025		TLM1, TLM2	
No. of classes required to complete UNIT-V : 10					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	HOD Sign Weekly
44	Economic aspects in utilization of electrical energy	2	28-10-2025 & 01-11-2025		TLM2, TLM6	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	30-06-2025	23-08-2025	8 W
Technical Training	25-08-2025	06-09-2025	2 W
I Mid Examinations	08-09-2025	13-09-2025	1 W
II Phase of Instructions	15-09-2025	15-11-2025	9 W
II Mid Examinations	17-11-2025	22-11-2025	1 W
Preparation and Practicals	24-11-2025	29-11-2025	1 W
Semester End Examinations	01-12-2025	13-12-2025	2 W

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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.

PSO2: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.

PSO3: To inculcate an ability to analyze, design and implement database applications.

Mrs R. Padma	Dr.AV.G.A.Marthanda	Dr.M.S.Giridhar	Dr. P. Sobha Rani
Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
COURSE HANDOUT
PART - A

PROGRAM : B.Tech. - VII-Sem. - CSE – B Section
ACADEMIC YEAR : 2025-26
COURSE NAME & CODE : Management Science for Engineers – 20HS02
L-T-P STRUCTURE : 4-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Mr. V.Sankararao, Sr. Assistant Professor
COURSE COORDINATOR : Dr. A.Nageswara Rao, Sr. Assistant Professor
PER-REQUISITE : NIL

COURSE EDUCATIONAL OBJECTIVES:

1. To make students understand management, its principles, contribution to management, organization, and its basic issues and types.
2. To make students understand the concept of plant location and its factors and plant layout and types, method of production and work study importance.
3. To understand the purpose and function of statistical quality control. And understand the material management techniques.

COURSE OUTCOMES:

After completion of the course student will be able to:
CO1: Understand management principles to practical situations based on the organization structures. **(L2)**
CO2: Design Effective plant Layouts by using work study methods. **(L2)**
CO3: Apply quality control techniques for improvement of quality and materials management. **(L3)**
CO4: Develop best practices of HRM in corporate Business to raise employee productivity. **(L2)**
CO5: Identify critical path and project completion time by using CPM and PERT techniques. **(L3)**

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	3	3	2	3				3			3		3	
CO2	3	3	1	2	1				3			3		3	
CO3	3	3	3	2	1				3			3		3	
CO4	3	2	3	2	3				1			3		3	
CO5	2	3	3	2	1				1			3		3	

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

BOS APPROVED TEXT BOOKS:

1. Dr. A.R.Aryasri, Management Science, TMH, 10th edition, 2012

References:

1. Koontz & weihrich – Essentials of management, TMH, 10th edition, 2015
2. Stoner, Freeman, Gilbert, Management, 6th edition Pearson education, New Delhi, 2004
3. O.P. Khana, Industrial engineering and Management L.S.Srinath, PERT & CPM

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT-I: INTRODUCTION

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction To Management	1	30.06.2025		TLM1	CO1	T1	
2.	Definition, Nature, Importance of management	1	02.07.2025		TLM1	CO1	T1	
3.	Functions of Management	1	03.07.2025		TLM1	CO1	T1	
4.	Taylor's scientific management theory	1	04.07.2025		TLM1	CO1	T1	
5.	Fayal's principles of management	1	07.07.2025		TLM3	CO1	T1	
6.	Contribution of Elton mayo, Maslow	1	09.07.2025		TLM1	CO1	T1	
7.	Herzberg, Douglas MC Gregor principles of management	1	10.07.2024		TLM1	CO1	T1	
8.	Basic Concepts of Organization, Authority, Responsibility	1	11.07.2025		TLM1	CO1	T1	
9.	Delegation of Authority, Span of control	1	14.07.2025		TLM1	CO1	T1, R1	
10.	Departmentation and Decentralization	1	16.07.2025		TLM1	CO1	T1, R1	
11.	Organization structures (Line organization)	1	17.07.2025		TLM1	CO1	T1, R1	
12.	Line and Functional staff organization,	1	18.07.2025		TLM1	CO1	T1	
13.	Committee and Matrix organization	1	21.07.2025		TLM3	CO1	T1	
No. of classes required to complete UNIT-I		**13**			**No. of classes taken:**			

UNIT-II: OPERATIONS MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
14.	Introduction, Plant location	1	23.07.2025		TLM1	CO2	T1, R3	
15.	Factors influencing location	1	24.07.2025		TLM1	CO2	T1, R3	
16.	Principles of plant layouts	1	25.07.2025		TLM1	CO2	T1, R3	
17.	Types of plant layouts	1	28.07.2025		TLM1	CO2	T1, R3	
18.	Methods of production	1	30.07.2025		TLM1	CO2	T1, R3	
19.		1	31.07.2025		TLM3	CO2	T1, R3	
20.	Work study	1	01.08.2025		TLM1	CO2	T1	
21.		1	04.08.2025		TLM1	CO2	T1	

22.	Basic procedure involved in method study	1	06.08.2025		TLM1	CO2	T1	
23.	Work measurement	1	07.08.2025		TLM3	CO2	T1	
24.	Work measurement	1	08.08.2025		TLM1	CO2	T1	
25.		1	11.08.2025		TLM1	CO2	T1	
26.	Assignment	1	13.08.2025		TLM6	CO2	T1	
No. of classes required to complete UNIT-II		**13**			**No. of classes taken:**			

UNIT-III: STATISTICAL QUALITY CONTROL & MATERIALS MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
27.	Introduction, Concept of Quality, Quality Control functions	1	14.08.2025		TLM1	CO3	T1	
28.	Meaning of SQC, Variables and attributes	1	18.08.2025		TLM1	CO3	T1, R1	
29.	X chart, R Chart	1	20.08.2025		TLM1	CO3	T1, R1	
30.	C Chart, P Chart	1	21.08.2025		TLM1	CO3	T1	
31.	Simple problems	1	22.08.2025		TLM3	CO3	T1, R1	
Technical Training 25.08.2025 to 06.09.2025 MID-I 08.09.2025 to 13.09.2025								
32.	Acceptance sampling, Sampling plans	1	15.09.2025		TLM1	CO3	T1, R1	
33.	Deming's contribution to quality	1	17.09.2025		TLM1	CO3	T1	
34.	Materials management Meaning and objectives	1	18.09.2025		TLM1	CO3	T1, R1	
35.	Inventory control & Need for inventory control	1	19.09.2025		TLM1	CO3	T1, R1	
36.	Purchase procedure, Store records	1	22.09.2025		TLM1	CO3	T1	
37.	EOQ	1	24.09.2025		TLM3	CO3	T1	
38.	ABC analysis	1	25.09.2025		TLM1	CO3	T2	
39.	Stock levels	1	26.09.2025		TLM1	CO3	T1	
No. of classes required to complete UNIT-III		**13**			**No. of classes taken:**			

UNIT-IV: HUMAN RESOURCE MANAGEMENT (HRM)

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
40.	Introduction	1	29.09.2025		TLM1	CO4	T1	
41.	Concepts of HRM	1	01.10.2025		TLM1	CO4	T1	

42.	Basic functions of HR manager	1	03.10.2025		TLM1	CO4	T1, R2	
43.	Man power planning	1	06.10.2025		TLM3	CO4	T1, R2	
44.	Recruitment	1	08.10.2025		TLM1	CO4	T1, R2	
45.	Selection,	1	09.10.2025		TLM1	CO4	T1, R1	
46.	Training & developmemt	1	10.10.2025		TLM1	CO4	T1, R1	
47.	Placement	1	13.10.2025		TLM1	CO4	T1	
48.	Wage and salary administration	1	15.10.2025		TLM3	CO4	T1, R1	
49.	Promotion, Transfers Separation	1	16.10.2025		TLM1	CO4	T1, R1	
50.	Performance appraisal	1	17.10.2025		TLM1	CO4	T1	
51.	Job evaluation	1	20.10.2025		TLM3	CO4	T1	
52.	Merit rating	1	22.10.2025		TLM3	CO4	T1	
No. of classes required to complete UNIT-IV		**13**			**No. of classes taken:**			

UNIT-V: PROJECT MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
53.	Introduction	1	23.10.2025		TLM1	CO5	T1,R2	
54.	Early techniques in project management	1	24.10.2025		TLM1	CO5	T1, R2	
55.	Network analysis	1	27.10.2025		TLM1	CO5	T1,R2	
56.	Programme Evaluation and Review Technique (PERT)	1	29.10.2025		TLM1	CO5	T1,R2	
57.	Problems	1	30.10.2025		TLM1	CO5	T1,R2	
58.	Critical path method (CPM)	1	31.10.2025		TLM1	CO5	T1, R2	
59.	Identifying critical path	1	03.11.2025		TLM1	CO5	T1,R2	
60.	Problems	1	05.11.2025		TLM1	CO5	T1,R2	
61.	Probability of completing project within given time	1	06.11.2025		TLM1	CO5	T1,R2	
62.	Project cost analysis	1	07.11.2025		TLM1	CO5	T1, R2	
63.	Problems	1	10.11.2025		TLM1	CO5	T1,R2	
64.	project crashing	1	12.11.2025		TLM1	CO5	T1,R2	
65.	Simple problems	1	13.11.2025		TLM1	CO5	T1,R2	
66.	Assignment	1	14.11.2025		TLM6	CO5	T1	
No. of classes required to complete UNIT-V		**14**			**No. of classes taken:**			

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

Part – C

EVALUATION PROCESS:

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1: Pursue higher education, entrepreneurship and research to compete at global level.

PEO2: Design and develop products innovatively in the area of computer science and engineering and in Other allied fields.

PEO3: Function effectively as individuals and as members of a team in the conduct of interdisciplinary Projects and even at all the levels with ethics and necessary attitude.

PEO4: Serve ever-changing needs of the society with a pragmatic perception.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

PO1 - Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 - 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.

PO3 - 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.

PO4 - 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.

PO5 - 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.

PO6 - 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.
PO7 - 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.
PO8 - Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9 - Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10 - 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.
PO11 - Project Management and Finance: Demonstrate knowledge and understanding of the ring and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12 - 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.

PROGRAM SPECIFIC OUTCOMES (PSOS):

PSO1: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.
PSO2: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3: To inculcate an ability to analyze, design and implement database applications.

Mr. V. Sankararao	Dr. A. Nageswara Rao	Mr. J. Subba Reddy	Dr. M.B.S.Sreekara Reddy
Course Instructor	Course Coordinator	Module Coordinator	HoD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: S. Srinivasa Reddy
Course Name & Code : Continuous Integration and Continuous Delivery using DevOps(20CSS4)
L-T-P Structure : 1-0-2 **Credits:** 2
Program/Sem/Sec : B.Tech., CSE, VII-Sem., Section – B. **A.Y.:** 2025-26

PRE-REQUISITE: Basic knowledge of certain basic programming languages such as Java, and Python.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

This course is designed to provide the core education necessary to build your DevOps vocabulary and to understand its principles and practices. With the help of key DevOps concepts and terminology, real-life case studies, examples and interactive group discussions and exercises, you will acquire a fundamental understanding of DevOps.

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

CO1	Understand the why, what, and how of DevOps adoption(**Understand – L2**)
CO2	Attain literacy on DevOps(**Apply L3**)
CO3	Align capabilities required in the team and create an automated CICD pipeline using a stack of tools(**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	1	-	2	-	2	-	-	-	-	-	2	2	3	-	-
CO2	1	-	2	-	2	-	-	-	-	-	2	2	-	-	-
CO3	1	-	2	-	2	-	-	-	-	-	2	2	-	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1- Low **2** –Medium **3-** High

REFERENCE BOOKS:

R1	Learning Continuous Integration with Jenkins: A beginner's guide to implementing Continuous Integration and Continuous Delivery using Jenkins - Nikhil Pathania ,Packt publication[https://www.amazon.in/Learning-Continuous-Integration-JenkinsPathania/dp/1785284835]
R2	Jenkins 2 – Up and Running: Evolve Your Deployment Pipeline for Next Generation Automation - Brent Laster, O'Reilly publication [https://www.amazon.in/Jenkins-2- Running-Brent-Laster/dp/1491979593]
R3	https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fapp%2Ftoc%2Flex_auth_01338269041100390473 5_shared%2Foverview[Software Engineering and Agile software development]
R4	https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fviewer%2Fhtml%2Flex_auth_0135015781949767681046 7[Development & Testing with Agile: Extreme Programming]
R5	https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fviewer%2Fhtml%2Flex_auth_01353898917192499226_shared[DevOps CICD]

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	01-07-2025		**DM5**	
2.	Module-2	3	08-07-2025		**DM5**	
3.	Module-3	3	15-07-2025 & 22-07-2025		**DM5**	
4.	Module-4	3	29-07-2025		**DM5**	
5.	Module-5	3	05-08-2025 & 12-08-2025		**DM5**	
6.	Module-6	3	19-08-2025 & 26-08-2025		**DM5**	
7.	Module-7	3	02-09-2025		**DM5**	
8.	Module-8	3	16-09-2025 & 23-09-2025		**DM5**	
9.	Module-9	3	07-10-2025		**DM5**	
10.	Module-10	3	14-10-2025		**DM5**	
11.	Module-11	3	28-10-2025		**DM5**	
12.	Module-12	3	04-11-2025		**DM5**	
13.	Internal exam	3	11-11-2025			

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

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mr. S. Srinivasa Reddy	Mr. S. Srinivasa Reddy	Dr. Y. V. B. Reddy	Dr. S. Nagarjun Reddy
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.G.V.Suresh
Course Name & Code : CLOUD COMPUTING(20CS24)
L-T-P Structure : 3-0-0 **Credits:**3
Program/Sem/Sec : B.Tech VII SemSec –C CSE **A.Y.:** 2025-26

PREREQUISITE: Computer Networks, and Operating Systems

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The Objective of the course is to introduce the concepts of evolving computer model, cloud computing, levels of services that can be achieved by cloud. and security aspects in the cloud.

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

CO1	Illustrate the key dimensions of the challenge of Cloud Computing (**Understand – L2**)
CO2	Classify the Levels of Virtualization and mechanism of tools. **(Understand – L2)**
CO3	Analyze Cloud infrastructure including Google Cloud and Amazon Cloud. (**Analyze – L4**)
CO4	Create Combinatorial Auctions for cloud resource and design scheduling algorithms for computing cloud. (**Apply – L3**)
CO5	Assess control storage systems and cloud security, the risks involved its impact and develop cloud application (**Analyze – L4**)

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	-	-	-	-	-	-	-	-	-	-	1	-
CO2	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
CO3	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
CO4	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
CO5	-	-	3	2	3	-	-	-	-	-	-	-	-	3	-
1 - Low			**2 –**Medium								**3 -** High				

TEXTBOOKS:

T1 Distributed and Cloud Computing, Kai Hwang, Geoffry C. Fox, Jack J. Dongarra MK Elsevier

T2 Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.

REFERENCE BOOKS:

R1 Cloud Computing, A Hands on approach, Arshadeep Bahga, Vijay Madisetti, University Press

R2 Cloud Computing, A Practical Approach, Anthony T Velte, Toby J Velte, Robert Elsenpeter,

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Systems **Modeling, Clustering and Virtualization**

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.	Scalable Computing over the Internet-The Age of Internet Computing	2	30-07-2025 01-07-2025		1 & 2	
2.	Scalable computing over the internet	1	02-07-2025		1 & 2	
3.	Technologies for Network Based Systems	2	03-07-2025 05-07-2025		1 & 2	
4.	System models for Distributed and Cloud Computing	2	07-07-2025 08-07-2025		1 & 2	
5.	Performance	2	09-07-2025 10-07-2025		1 & 2	
6.	Security and Energy Efficiency.	2	12-07-2025 14-07-2025		1 & 2	
7.	Security and Energy Efficiency.	2	15-07-2025 16-07-2025		1 & 2	
8.	Technologies for Network Based Systems	2	17-07-2025 19-07-2025		1 & 2	
9.	Implementation Levels of Virtualization	1	21-07-2025		1 & 2	
10.	Virtualization Structures/ Tools and Mechanisms	1	22-07-2025		1 & 2	
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II: Virtual Machines and Virtualization of Clusters and Data Centers

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	Virtualization Structures/ Tools and Mechanisms	1	23-07-2025		1 & 2	
12.	Virtualization of CPU	1	24-07-2025		1 & 2	
13.	Virtualization of CPU	1	26-07-2025		1 & 2	
14.	Memory and I/O Devices	1	28-07-2025		1 & 2	
15.	Memory and I/O Devices	1	29-07-2025		1 & 2	
16.	Virtual Clusters and Resource Management	1	30-07-2025 31-07-2025		1 & 2	
17.	Virtual Clusters and Resource Management	1	02-08-2025		1 & 2	

18.	Virtualization for Data-Center Automation	1	04-08-2025		1 & 2	
19.	Virtualization for Data-Center Automation	2	05-08-2025 06-08-2025		1 & 2	
20.	Cloud Computing and Service Models	1	07-08-2025		1 & 2	
No. of classes required to complete UNIT-II: 10				**No. of classes taken:**		

UNIT-III: Cloud Platform Architecture

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.	Public Cloud Platforms	1	09-08-2025		1 & 2	
22.	Service Oriented Architecture	2	11-08-2025 12-08-2025		1 & 2	
23.	Programming on Amazon AWS	2	18-08-2025 19-08-2025		1 & 2	
24.	Microsoft Azure	2	20-08-2025 21-08-2025		1 & 2	
25.	Policies and Mechanisms for Resource Management	1	25-08-2025		1 & 2	
26.	Applications of Control Theory to Task Scheduling on a Cloud	1	26-08-2025		1 & 2	
27.	Stability of a Two-Level Resource Allocation Architecture	1	28-08-2025		1 & 2	
28.	Stability of a Two-Level Resource Allocation Architecture	1	30-08-2025			
No. of classes required to complete UNIT-III: 09				**No. of classes taken:**		

UNIT-IV: Cloud Resource Management and Scheduling

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
29.	Feedback Control Based on Dynamic Thresholds	1	01-09-2025		1 & 2	
30.	Coordination of Specialized Autonomic Performance Managers	1	02-09-2025		1 & 2	
31.	Coordination of Specialized Autonomic Performance Managers	2	03-09-2025 04-09-2025		1 & 2	
32.	Resource Bundling, Scheduling Algorithms for Computing Clouds-Fair Queuing, Start Time Fair Queuing.	1	06-09-2025		1 & 2	
33.	Resource Bundling,	2	15/09/2025		1 & 2	

	Scheduling Algorithms for Computing Clouds-Fair Queuing, Start Time Fair Queuing.		16/09/2025			
34.	Evolution of storage technology	1	17/09/2025		1 & 2	
35.	storage models	1	18/09/2025		1 & 2	
36.	file systems and database	1	20/09/2025		1 & 2	
No. of classes required to complete UNIT-IV: 10				**No. of classes taken:**		

UNIT-V: Storage Systems

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.	Distributed File Systems	2	22/09/2025		1 & 2	
38.	General Parallel File Systems.	1	23/09/2025		1 & 2	
39.	Google File System	1	24/09/2025		1 & 2	
40.	EMAIL	1	25/09/2025		1 & 2	
41.	File Transfer Protocol (FTP)	1	27/09/2025		1 & 2	
42.	WWW ,HTTP	1	06/10/2025		1 & 2	
43.	SNMP	1	07/10/2025		1 & 2	
44.	Bluetooth,	1	08/10/2025		1 & 2	
45.	Firewalls	2	08/10/2025		1 & 2	
No. of classes required to complete UNIT-V: 12				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R20 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- DescriptiveExamination (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+A	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, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr. G.V.Suresh**	**M. Gayathri**	**Dr. Venkata Subbaiah**	**Dr. S. Nagarjuna Reddy**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs B.Nirosha
Course Name & Code : NATURAL LANGUAGE PROCESSING-20AD09
L-T-P Structure : **3-0-0** **Credits:** 03
Program/Sem/Sec : B.Tech-CSE / VII SEM/C-Sec
A.Y. : 2025-26

PRE-REQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of the course is to make learn the basic elements of C programming, control structures, derived data types, Modular programming, user defined structures, basics of files and its I/O operations.

CO1	Familiar with the basic components of NLP. **(Understand - L2)**
CO2	Applying N-gram models to predict a sequence of text. **(Apply - L3)**
CO3	Build a basic language understanding system using preliminary concepts of NLTK library. **(Apply - L3)**
CO4	Exposure on advanced techniques for understanding patterns in text **(Apply-L3)**
CO5	Understand the semantics of linguistic components in a natural dialogue **(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	2	2	-	-	3	-	-	-	-	-	-	2	2	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	-	3	-	3	-	-	-	-	-	-	-	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).

TEXTBOOKS:

1. Daniel Jurafsky, James H. Martin ,"Speech and Language Processing" , Third Edition, PHI, 2020.
2. https://realpython.com/nltk-nlp-python/#getting-text-to-analyze

REFERENCE BOOKS:

1. Natural Language Processing with Python: Analysing Text with the Natural Language Toolkit, Steven Bird, Ewan Klein, 2011
2. Applied Text Analysis with Python: Enabling Language-Aware Data Products with Machine Learning, Benjamin Bengfort, Rebecca Bilbro, 2018
3. Speech and Language Processing, 2nd Edition, Daniel Jurafsky, James H. Martin, 2009

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	Learning Outcomes	HOD Sign Weekly
1	Introduction to NLP	1	30-06-2025		**TLM1**	CO1	
2	Knowledge in Speech and Language Processing	2	01-07-2025 03-07-2025		**TLM1**	CO1	
3	Ambiguity; Models and Algorithms	2	04-07-2025 05-07-2025		**TLM1**	CO1	
4	Language, Thought and Understanding;	2	07-07-2025 08-07-2025		**TLM1**	CO1	
5	History Regular Expressions Regular Expression	2	10-07-2025 11-07-2025		**TLM1**	CO1	
6	Words; Corpora;	2	12-07-2025 14-07-2025		**TLM1**	CO1	
7	Text Normalization	2	15-07-2025 17-07-2025		**TLM1**	CO1	
8	Minimum Edit Distance	2	18-07-2025 19-07-2025		**TLM1**	CO1	
9	Unit-I Assignment Test	1	21-07-2025		**TLM1**	CO1	
No. of classes required to complete UNIT-I		16	No. of classes taken:				

UNIT-II: N-gram Language Models

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
10	N-Grams; Evaluating Language Models	2	22-07-2025 24-07-2025		TLM1	CO2	
11	Generalization and Zeros.	2	25-07-2025 28-07-2025		TLM1	CO2	
12	Smoothing: Laplace Smoothing	2	29-07-2025 31-07-2025		TLM1	CO2	
13	Add-k Smoothing	2	01-08-2025 02-08-2025		TLM1	CO2	
14	Backoff and Interpolation	2	04-08-2025 05-08-2025		TLM1	CO2	
15	Kneser-Ney Smoothing	2	07-08-2025 08-08-2025		TLM1	CO2	
16	Unit-II Assignment Test	1	09-08-2025		TLM1	CO2	
No. of classes required to complete UNIT-2		13	No. of classes taken:				

UNIT – III: Natural language processing tools in Python (NLTK Package)

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
17	Part-I: Introduction to NLTK	2	11-08-2025 12-08-2025		**TLM1**	CO3	
18	Tokenizing; Filtering Stop words; Stemming	2	14-08-2025 18-08-2025		**TLM1**	CO3	
19	Tagging parts of speech; Lemmatizing;	2	19-08-2025 21-08-2025		**TLM1**	CO3	
20	Chunking	2	22-08-2025 23-08-2025		**TLM1**	CO3	
21	Chinking Part-II: Using Named Entity Recognition (NER)	2	15-09-2025 16-09-2025		**TLM1**	CO3	
22	Getting Text to Analyze	2	18-09-2025 19-09-2025		**TLM1**	CO3	
23	Using a Concordance	2	20-09-2025 22-09-2025		**TLM1**	CO3	
24	Making a Dispersion Plot.	2	23-09-2025 25-09-2025		**TLM1**	CO3	
25	Unit-III Assignment Test	1	26-09-2025		**TLM1**	CO3	
No. of classes required to complete UNIT-3		17	No. of classes taken:				

UNIT-IV: Information Extraction

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
26	Relation Extraction Algorithms	2	27-09-2025 03-10-2025		TLM1	CO4	
27	Using Patterns to extract relations	2	04-10-2025 06-10-2025		TLM1	CO4	
28	Relation extraction via supervised learning	2	07-10-2025 09-10-2025		TLM1	CO4	
29	Semi supervised relation extraction via bootstrapping	2	10-10-2025 11-10-2025		TLM1	CO4	
30	Distant Supervision for Relation Extraction	2	13-10-2025 14-10-2025		TLM1	CO4	
31	Evaluation of Relation Extraction	2	16 -10-2025		TLM1	CO4	
32	Extracting Times	2	17-10-2025		TLM1	CO4	
33	Extracting Events and their Times; Template Filling	2	18-10-2025 20-10-2025		TLM1	CO4	
34	Unit-IV Assignment Test	1	23-10-2025		TLM1	CO4	
No. of classes required to complete UNIT-4		17	No. of classes taken:				

UNIT-V: Word Senses and WordNet

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
35	Defining Word Senses, How many senses do words have	3	24-10-2025 25-10-2025 27-10-2025		TLM1	CO5	
36	Relations between senses	3	28-10-2025 30-10-2025 31-10-2025		TLM1	CO5	
37	WordNet: Sense relations in WordNet	3	01-11-2025 03-11-2025 04-11-2025		TLM1	CO5	
38	Word Sense Disambiguation	2	06-11-2025 07-11-2025		TLM1	CO5	
39	Alternate WSD algorithms and Tasks	2	08-11-2025 10-11-2025		TLM1	CO5	
40	Alternate WSD algorithms and Tasks	2	11-11-2025 13-11-2025		TLM1	CO5	
41	Unit-V Assignment Test	1	14-11-2025		TLM1	CO5	
42	Revision	1	15-11-2025				
No. of classes required to complete UNIT-5		17	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.Nirosha	Mrs. B.Swathi	Dr K.Devi Priya	Dr. S.Nagarjuna Reddy
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mrs B.Usha Rani
Course Name & Code : BLOCKCHAIN TECHNOLOGIES (20CS29)
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., VII-C A.Y: 2025-26

PRE-REQUISITE: Information Security

COURSE EDUCATIONAL OBJECTIVES (CEOs):

To understand block chain technology and Crypto currency works.

COURSE OUTCOMES (COs): After the completion of the course, student will be able to

CO 1	Demonstrate the block chain basics, Crypto currency. (UnderstandL2)
CO 2	Compare and contrast the use of different private vs. public block chain and use cases (Understand-L2)
CO 3	Design an innovative Bit coin Block chain and scripts, Block chain Science on varies coins (Apply-L3)
CO 4	Classify Permission Block chain and use cases Hyper ledger, Corda(Analyze-L4)
CO 5	Use of Block-chain in E-Governance, Land Registration, Medical Information Systems and others (Apply-L3)

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	-	-	-	-	-	-	-	-	-	2	-
CO2	3	2	1	1	-	-	-	-	-	-	-	1	-	2	-
CO3	2	3	1	1	-	-	-	-	-	-	-	-	-	2	-
CO4	3	2	1	-	-	-	-	-	-	-	-	-	-	2	-
CO5	1	3	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: Block chain Blue print for Economy by Melanie Swan

REFERENCE BOOKS:

Block chain Basics: A Non-Technical Introduction in 25 Steps 1st Edition, by Daniel Drescher.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section C

UNIT-I :

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, CO'S Discussion	2	30-06-2025 01-07-2025		TLM1	
2.	basic ideas behind blockchain	2	03-07-2025 03-07-2025		TLM1	
3.	how it is changing the landscape of digitalization	2	05-07-2025 07-07-2025		TLM1	
4.	introduction to cryptographic conceptsrequired	2	08-07-2025 10-07-2025		TLM1	
5.	Block chain or distributed trust	2	10-07-2025 12-07-2025		TLM1	
6.	Currency	1	15-07-2025		TLM1	
7.	Cryptocurrency	1	17-07-2025		TLM1	
8.	How a Cryptocurrency works	1	17-07-2025		TLM1	
9.	Financial services	1	19-07-2025		TLM1	
10.	Bitcoin prediction markets.	2	21-07-2025 22-07-2025		TLM1	
11.	Tutorial-I	1	24-07-2025		TLM1	
No. of classes required tocomplete UNIT-I		**17**		**No of classes taken**		

UNIT-II:

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.	Hashing	1	24-07-2025		TLM1	
13.	public key cryptosystems	2	28-07-2025 29-07-2025		TLM1	
14.	private vs public block chain and use cases	1	31-07-2025		TLM1	
15.	Hash Puzzles	1	31-07-2025		TLM1	
16.	Extensibility of Block chain concepts	2	02-08-2025 02-08-2025		TLM1	

17.	Digital Identity verification	1	04-08-2025		TLM1	
18.	Block chainNeutrality	2	05-08-2025 07-08-2025		TLM1	
19.	Digital art	1	07-08-2025		TLM1	
20.	Block chain Environment	2	11-08-2025 12-08-2025		TLM1	
21.	Tutorial-II	1	14-08-2025		TLM1	
No. of classes required to complete UNIT-II		**14**		**No of classes taken**		

UNIT-III:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Bitcoin Block chain and scripts	2	14-08-2025 18-08-2025		TLM1	
23.	Use cases of Bitcoin Blockchain scripting language in micropayment	2	13-08-2025 19-08-2025		TLM1	
24.	escrow etc Downside of Bit coin mining	2	21-08-2025 21-08-2025		TLM1	
25.	Block chain Science: Grid coin	2	23-08-2025 15-09-2025		TLM1	
26.	Folding coin	1	16-09-2025		TLM1	
27.	Block chain Genomics	1	18-09-2025		TLM1	
28.	Bit coin MOOCs	1	18-09-2025		TLM1	
29.	Tutorial-III	1	20-09-2025		TLM3	
No. of classes required to complete UNIT-III		**12**		**No of classes taken**		

UNIT-IV:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
30.	Ethereum continued	2	22-09-2025 23-09-2025		TLM1	
31.	IOTA	1	25-09-2025		TLM1	
32.	The real need for mining	1	25-09-2025		TLM2	
33.	consensus	1	27-09-2025		TLM1	
34.	Byzantine Generals Problem	1	01-10-2025		TLM2	
35.	Consensus as a Distributed coordination problem	2	6-10-2025		TLM1	

36.	Coming to private or permissioned block chains	2	07-10-2025 09-10-2025		TLM2	
37.	Introduction to Hyper ledger	1	09-10-2025		TLM1	
38.	Currency & Token	1	11-10-2025		TLM1	
39.	Campus coin	1	13-10-2025		TLM2	
40.	Coin drop as a strategy for Public adoption	1	14-10-2025		TLM1	
41.	Currency Multiplicity	1	16-10-2025		TLM2	
42.	Demurrage currency	1	16-10-2025		TLM1	
43.	Tutorial-IV	1	18-10-2025		**TLM3**	
No. of classes required to complete UNIT-IV		**17**	**No of classes taken**			

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
44.	Technical challenges	2	20-10-2025 23-10-2025		TLM1	
45.	Business model challenges	2	23-10-2025 25-10-2025		TLM2	
46.	Scandals and Public perception	2	27-10-2025 28-10-2025		TLM1	
47.	Government Regulations	2	30-10-2025 30-10-2025		TLM2	
48.	Uses of Block chain in E-Governance	1	01-11-2025		TLM1	
49.	Land Registration	1	03-11-2025		TLM1	
50.	Medical Information Systems.	2	04-11-2025 06-11-2025		TLM2	
51.	Tutorial – V / Quiz - V	2	10-11-2025 11-11-2025		TLM3	
52.	Discussion about SEE paper	1	13-11-2025 13-11-2025		TLM3	
No. of classes required to complete UNIT-V		**15**		**No of classes taken**		

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

PART-C

EVALUATION PROCESS (R20 Regulations):

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

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 comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
Mrs. B. Usha Rani	Dr. K. Phani Phaneendra	Dr D Venkata Subbaiah	Dr. S. Nagarjuna Reddy

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr C Rajamallu

Course Name & Code : **BASICS OF CIVIL ENGINEERING & 20CE81**

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

Program/Sem/Sec : B.Tech., CSE., VII-Sem., Sections- B&C A.Y: 2025-26

PRE-REQUISITE: Nil

COURSE OBJECTIVES: This course deals with the importance of building planning, properties and applications of various building materials, soil classification and different types of foundations, important aspects of surveying, levelling operations and identify the terminology in roadway and railway networks, principles of water resources and environmental engineering.

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

CO 1	Understand the importance of building planning for construction. (Understand-L2)
CO 2	Identify the uses and characteristics of different building materials. (Remember-L1)
CO 3	Understand the different types of soils and foundations required for specific usage. (Understand-L2)
CO 4	Differentiate the basics of surveying and levelling operations for field application and categorize the important elements of roadway and railway networks (Understand-L2)
CO 5	Understand the importance of quantity and quality aspects of water in the society (Remember-L1)

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

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

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

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

TEXT BOOKS:

T1 M.S Palanichamy "Basic Civil Engineering", Tata McGraw Hill Publishing 2000.

REFERENCE BOOKS:

R1 S S Bhavikatti "Basic Civil Engineering", New age International Publications, 2010

R2 C P Kaushik& S S Bhavikatti "Basic Civil Engineering ", New age International

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Building Planning

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 and course outcomes	1	30-05-2025		TLM2	
2.	Building Planning- Role of a Civil Engineer	1	01-07-2025		TLM2	
3.	Inter connection among specializations in Civil Engineering	1	02-07-2025		TLM2	
4.	Elements of a Building, Basic Requirements of a Building	1	05-07-2025		TLM2	
5.	Planning- Hot and dry climates	1	06-07-2025		TLM2	
6.	Hot and wet climates, Cold climatic conditions	1	11-07-2025		TLM2	
7.	Grouping, Privacy, circulation	1	12-07-2025		TLM2	
8.	Sanitation and ventilation	1	13-07-2025		TLM2	
9.	Orientation, Economy,	1	18-07-2025		TLM2	
10.	Role of Bye-laws	1	19-07-2025		TLM2	
No. of classes required to complete UNIT-I:				No. of classes taken		

UNIT-II: Building Materials

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.	Building Materials -Classification	1	20-07-2025		TLM2	
2.	Rocks - Composition, Properties, Commercial forms, Uses	1	23-07-2025		TLM2	
3.	Bricks - Composition, Properties, Commercial forms, Uses	1	21-07-2025		TLM2	
4.	Timber, Ply wood - Classification, Composition, Properties, Commercial forms	1	25-07-2025		TLM2	
5.	Glass-Classification, Composition, Properties, Commercial forms,	1	26-08-2025		TLM2	
6.	Bitumen- Classification, Composition, Properties, Commercial forms,	1	30-09-2025		TLM2	
7.	Aluminium, Cement Classification, Composition, Properties, Commercial forms,	1	01-09-2025		TLM2	

8.	Steel, Concrete Classification, Composition, Properties, Commercial forms, Uses	1	01-09-2025		TLM2	
9.	Mortar Classification, Composition, Properties, Commercial forms, Uses	1	02-09-2025		TLM2	
10.	Concept of eco-friendly materials, examples	1	02-09-2025		TLM2	
No. of classes required to complete UNIT-II:				No. of classes taken:		

UNIT-III: SOIL CLASSIFICATION AND FOUNDATION

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.	Types of soils, soil classification	1	03-09-2025		TLM2	
2.	Engineering properties	1	06-09-2025		TLM2	
3.	Bearing Capacity of soil, purpose and methods of improving bearing capacity	1	6-09-2025		TLM2	
4.	MID-1	08-09-2025 to 13-09-2025				
5.	Foundations – Requirements	1	15-09-2025		TLM2	
6.	Foundations - Loads, Types	1	16-09-2025		TLM2	
7.	Foundations for special structures-water tanks-	1	17-09-2025		TLM2	
8.	Foundations for special structures-silos, chimneys	1	20-09-2025		TLM2	
9.	Foundations for special structures-transmission line towers- cooling towers,	1	22-09-2025		TLM2	
10.	Foundations for special structures-telecommunication towers	1	23-09-2025		TLM2	
No. of classes required to complete UNIT-III:				No. of classes taken:		

UNIT-IV : SURVEYING, LEVELLING & HIGHWAY NETWORK

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.	Objective of surveying– Principles, applications and uses of - chain surveying	1	24-09-2025		TLM2	
2.	Principles, applications and uses of Theodolite, levelling	1	27-09-2025		TLM2	
3.	Principles, applications and uses of contour maps, Planimeter	1	06-10-2025		TLM2	
4.	Assignment	1	07-10-2025		TLM2	
5.	EDM Concept - Linear distance and area measurement	1	08-10-2025		TLM2	
6.	Total station- GIS-Concept and applications in civil engineering.	1	11-10-2025		TLM2	
7.	Tutorial	1	13-10-2025		TLM2	
8.	Indian highways- Basic terminology- Classification of roads - PIEV theory	1	14-10-2025		TLM2	
9.	Traffic signs - IRC Code provisions	1	15-10-2025			

10.	Indian railways –Permanent way and components of railway track	1	18-10-2025		TLM2	
11.	Gauges – rails -sleepers – ballast.	1	21-10-2025		TLM2	
No. of classes required to complete UNIT-IV:				No. of classes taken:		

UNIT-V: WATER RESOURCES AND ENVIRONMENTAL ENGINEERING

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.	Objectives of water supply system-Sources of water supply-Hydrologic cycle	1	27-10-2025		TLM2	
2.	Rainfall measurement - Purpose of dams, reservoirs, intakes, infiltration galleries	1	28-10-2025		TLM2	
3.	Water demands –Water quality parameters and their impacts - Principles of water treatment	1	29-10-2025		TLM2	
4.	Objectives and methods of water distribution systems – Sewage generation in a society –	1	01-11-2025		TLM2	
5.	Wastewater characteristics and their impacts	1	05-11-2025		TLM2	
6.	Principles of sewage treatment	1	08-11-2025		TLM2	
7.	Disposal of sewage	1	10-11-2025		TLM2	
8.	Water quality standards for – drinking purpose,	1	11-11-2025		TLM2	
9.	Water quality standards for irrigation,	1	12-11-2025		TLM2	
10.	**MID-2**	**17-11-2025 to 22-11-2025**				
No. of classes required to complete UNIT-V:				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
PEO 2	To adapt to the modern engineering tools for planning, analysis, design, implementation of analytical data and assess their relevant significance in societal and legal issues necessary in their professional career.
PEO 3	To exhibit professionalism, ethical attitude, communication, managerial skills, team work and social responsibility in their profession and adapt to current trends by engaging in continuous learning.

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 problem
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 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 analyse the various laboratory tests required for the professional demands.
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain.

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr C Rajamallu)	(Mr.PM Ganga Raju)	(Dr C Rajamallu)	(Dr. KV Ramana)

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor : Dr. Y. Raghuvamsi
Course Name & Code : Utilization of Electrical Energy & 20EE83
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech, CSE, VII-Sem, C-sec A.Y : 2025-26
Pre-requisites : --NIL

Course Educational Objective: This course enables the student to acquire knowledge on methods of Electric Heating and welding, different lighting schemes. It also introduces the concepts of Electric Drives for Industrial and traction system and also different tariff methods.

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

CO 1	Understand mechanism of electric heating and electric welding **(Understanding –L2)**
CO 2	Analyze performance of various lighting schemes (Understanding –L2)
CO 3	Analyze the performance of electric drive systems **(Understanding –L2)**
CO 4	Illustrate the different schemes of traction and its main components **(Understanding –L2)**
CO5	Understand various tariff methods and power factor improvement techniques**. (Understanding –L2)**

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 a	PSO b	PSO c
CO1	2	2	2												
CO2	2	2	2								2				
CO3	2	2	2												
CO4	2	2	2								2				
CO5	2	2	2								2				

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

TEXT BOOKS:

T1: C.L.Wadhwa "Generation, Distribution and Utilization of Electrical energy, New Age International Publishers, 3rd Edition, 2015.

T2: N.V.Suryanarayana "Utilization of electric power including electric drives and electric traction, New age international publishers New Delhi,2nd edition 2014.

REFERENCE BOOKS:

R1: Art & Science of Utilization of electrical Energy, Partab, Dhanpat Rai & Co., 2004.

R2: Utilization of Electric Energy, E. Openshaw Taylor and V. V. L. Rao, Universities Press, 2009.

Part - B
COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: ELECTRIC HEATING &WELDING

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 CO, POs	1	30-06-2025		TLM1	
2.	**Electric heating:** Advantages and methods of Electric heating	1	01-07-2025		TLM2	
3.	Materials for heating elements, Requirement of good heating material	1	03-07-2025		TLM2	
4.	Resistance heating	1	04-07-2025		TLM2	
5.	Induction heating	1	07-07-2025		TLM2	
6.	Induction heating	1	08-07-2025		TLM2	
7.	Dielectric heating	1	10-07-2025		TLM2	
8.	Causes of failures of heating elements, Arc Furnace - Direct	1	11-07-2025		TLM2, TLM6	
9.	Arc Furnace-Indirect	1	14-07-2025		TLM2, TLM6	
10.	**Electric Welding:** Resistance welding	1	15-07-2025		TLM2	
11.	Resistance welding	1	17-07-2025		TLM2, TLM4	
12.	Arc welding	1	18-07-2025		TLM2	
13.	Arc welding	1	21-07-2025		TLM2, TLM4	
14.	Electric welding equipment	1	22-07-2025		TLM2, TLM4	
15.	Comparison between AC and DC welding	1	24-07-2025		TLM2, TLM6	
No. of classes required to complete UNIT-I : 15					No. of classes taken:	

UNIT-II: ILLUMINATION ENGINEERING

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.	Introduction	1	25-07-2025		TLM1	
17.	Nature of light	1	28-07-2025		TLM2	
18.	Laws of illumination	1	29-07-2025		TLM1	
19.	Laws of illumination	1	31-07-2025		TLM1	
20.	Lighting schemes, Sources of light	1	01-08-2025		TLM2	
21.	Fluorescent Lamp	1	04-08-2025		TLM1, TLM4	
22.	CFL and LED	1	05-08-2025		TLM1, TLM4	
23.	Sodium Vapor Lamp	1	07-08-2025		TLM1, TLM2	

24.	Neon lamps	1	08-08-2025		TLM1, TLM2	
25.	Mercury vapor lamps	1	11-08-2025		TLM1, TLM2	
26.	Comparision between tungsten &fluorescent tubes, Requirements of good lighting	1	12-08-2025		TLM2, TLM6	
27.	Street lighting	1	14-08-2025		TLM2	
28.	Assignment/Quiz	1	18-08-2025		TLM1	
No. of classes required to complete UNIT-II : 13					No. of classes taken:	

UNIT-III: ELECTRIC DRIVES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
29.	Introduction, Elements of drive, advantages	1	19-08-2025		TLM2	
30.	Factors affecting selection of motor	1	21-08-2025		TLM2	
31.	Types of Electric drives	1	22-08-2025		TLM2	
32.	Types of loads	1	15-09-2025		TLM2	
33.	Steady state characteristics of drives	1	16-09-2025		TLM1, TLM2	
34.	Steady state characteristics of drives	1	18-09-2025		TLM1, TLM2	
35.	Transient Characteristics of drives	1	19-09-2025		TLM1, TLM2	
36.	Transient Characteristics of drives	1	22-09-2025		TLM1, TLM2	
37.	Size of motor	1	23-09-2025		TLM2	
38.	Load Equalization	1	25-09-2025		TLM1, TLM2	
39.	Industrial applications	1	26-09-2025		TLM2, TLM6	
No. of classes required to complete UNIT-III : 11					No. of classes taken:	

UNIT-IV: ELECTRIC TRACTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
40.	Introduction	1	29-09-2025		TLM2	
41.	Requirement of an ideal traction system	1	03-10-2025		TLM2	
42.	Supply system for electric traction	1	06-10-2025		TLM2	
43.	Traction motors	1	07-10-2025		TLM2	
44.	Train movement	1	09-10-2025		TLM2	
45.	Mechanics of train movement	1	10-10-2025		TLM1, TLM2	
46.	Modern trends in electric traction	1	13-10-2025		TLM2, TLM6	
47.	Speed time curves for	1	14-10-2025		TLM1, TLM2	

	different services					
48.	Trapezoidal speed time curves	1	16-10-2025		TLM1, TLM2	
49.	Quadrilateral speed time curves	1	17-10-2025		TLM1, TLM2	
50.	Problems on train movement	1	21-10-2025		TLM1	
51.	Problems on train movement	1	23-10-2025		TLM1	
52.	Assignment/quiz	1	24-10-2025		TLM1	
No. of classes required to complete UNIT-IV : 13					No. of classes taken:	

UNIT-V: TARIFF AND POWER FACTOR IMPROVEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
53.	Tariff: Desirable characteristics	1	27-10-2025		TLM2	
54.	Types of tariff	1	28-10-2025		TLM2	
55.	Flat rate tariff	1	30-10-2025		TLM1, TLM2	
56.	Block-rate tariff	1	31-10-2025		TLM1, TLM2	
57.	KVA maximum demand tariff	1	03-11-2025		TLM1, TLM2	
58.	Time of Day tariff	1	04-11-2025		TLM1, TLM2	
59.	Disadvantages of low power factor, Advantages of improved power factor	1	06-11-2025		TLM2	
60.	Power factor Improvement devices	1	07-11-2025		TLM1, TLM2	
61.	Power factor improvement using static capacitor	1	10-11-2025		TLM1, TLM2	
62.	Most economical power factor	1	11-11-2025		TLM1	
63.	Location of power factor improvement devices from consumer	1	13-11-2025		TLM2, TLM6	
64.	Revision	1	14-11-2025		TLM1, TLM2	
No. of classes required to complete UNIT-V : 12					No. of classes taken:	

Content beyond the Syllabus

Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
Economic aspects in utilization of electrical energy	1	14-11-2025		TLM2, TLM6	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	30-06-2025	23-08-2025	8 W
Technical Training	25-08-2025	06-09-2025	2 W
I Mid Examinations	08-09-2025	13-09-2025	1 W
II Phase of Instructions	15-09-2025	15-11-2025	9 W
II Mid Examinations	17-11-2025	22-11-2025	1 W
Preparation and Practicals	24-11-2025	29-11-2025	1 W
Semester End Examinations	01-12-2025	13-12-2025	2 W

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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.

PSO2: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.

PSO3: To inculcate an ability to analyze, design and implement database applications.

Dr. Y. Raghuvamsi	Dr. A.V.G.A.Marthanda	Dr. M.S. Giridhar	Dr. P. Sobha Rani
Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
COURSE HANDOUT
PART - A

PROGRAM : B.Tech. - VII-Sem. - CSE – C Section
ACADEMIC YEAR : 2025-26
COURSE NAME & CODE : Management Science for Engineers – 20HS02
L-T-P STRUCTURE : 4-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Mr. V.Sankararao, Sr. Assistant Professor
COURSE COORDINATOR : Dr. A.Nageswara Rao, Sr. Assistant Professor
PER-REQUISITE : NIL

COURSE EDUCATIONAL OBJECTIVES:

1. To make students understand management, its principles, contribution to management, organization, and its basic issues and types.
2. To make students understand the concept of plant location and its factors and plant layout and types, method of production and work study importance.
3. To understand the purpose and function of statistical quality control. And understand the material management techniques.

COURSE OUTCOMES:

After completion of the course student will be able to:
CO1: Understand management principles to practical situations based on the organization structures. **(L2)**
CO2: Design Effective plant Layouts by using work study methods. **(L2)**
CO3: Apply quality control techniques for improvement of quality and materials management. **(L3)**
CO4: Develop best practices of HRM in corporate Business to raise employee productivity. **(L2)**
CO5: Identify critical path and project completion time by using CPM and PERT techniques. **(L3)**

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	3	3	2	3				3			3		3	
CO2	3	3	1	2	1				3			3		3	
CO3	3	3	3	2	1				3			3		3	
CO4	3	2	3	2	3				1			3		3	
CO5	2	3	3	2	1				1			3		3	

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

BOS APPROVED TEXT BOOKS:

1. Dr. A.R.Aryasri, Management Science, TMH, 10th edition, 2012

References:

1. Koontz & weihrich – Essentials of management, TMH, 10th edition, 2015
2. Stoner, Freeman, Gilbert, Management, 6th edition Pearson education, New Delhi, 2004
3. O.P. Khana, Industrial engineering and Management L.S.Srinath, PERT & CPM

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-C

UNIT-I: INTRODUCTION

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction To Management	1	30.06.2025		TLM1	CO1	T1	
2.	Definition, Nature, Importance of management	1	01.07.2025		TLM1	CO1	T1	
3.	Functions of Management	1	02.07.2025		TLM1	CO1	T1	
4.	Taylor's scientific management theory	1	05.07.2025		TLM1	CO1	T1	
5.	Fayal's principles of management	1	07.07.2025		TLM3	CO1	T1	
6.	Contribution of Elton mayo, Maslow	1	08.07.2025		TLM1	CO1	T1	
7.	Herzberg, Douglas MC Gregor principles of management	1	09.07.2024		TLM1	CO1	T1	
8.	Basic Concepts of Organization, Authority, Responsibility	1	12.07.2025		TLM1	CO1	T1	
9.	Delegation of Authority, Span of control	1	14.07.2025		TLM1	CO1	T1, R1	
10.	Departmentation and Decentralization	1	15.07.2025		TLM1	CO1	T1, R1	
11.	Organization structures (Line organization)	1	16.07.2025		TLM1	CO1	T1, R1	
12.	Line and Functional staff organization,	1	19.07.2025		TLM1	CO1	T1	
13.	Committee and Matrix organization	1	21.07.2025		TLM3	CO1	T1	
No. of classes required to complete UNIT-I		**13**			**No. of classes taken:**			

UNIT-II: OPERATIONS MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
14.	Introduction, Plant location	1	22.07.2025		TLM1	CO2	T1, R3	
15.	Factors influencing location	1	23.07.2025		TLM1	CO2	T1, R3	
16.	Principles of plant layouts	1	28.07.2025		TLM1	CO2	T1, R3	
17.	Types of plant layouts	1	29.07.2025		TLM1	CO2	T1, R3	
18.	Methods of production	1	30.07.2025		TLM1	CO2	T1, R3	
19.		1	02.08.2025		TLM3	CO2	T1, R3	
20.	Work study	1	04.08.2025		TLM1	CO2	T1	
21.		1	05.08.2025		TLM1	CO2	T1	

22.	Basic procedure involved in method study	1	06.08.2025		TLM1	CO2	T1	
23.	Work measurement	1	09.08.2025		TLM3	CO2	T1	
24.	Work measurement	1	11.08.2025		TLM1	CO2	T1	
25.		1	12.08.2025		TLM1	CO2	T1	
26.	Assignment	1	13.08.2025		TLM6	CO2	T1	
No. of classes required to complete UNIT-II		**13**			**No. of classes taken:**			

UNIT-III: STATISTICAL QUALITY CONTROL & MATERIALS MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
27.	Introduction, Concept of Quality, Quality Control functions	1	18.08.2025		TLM1	CO3	T1	
28.	Meaning of SQC, Variables and attributes	1	19.08.2025		TLM1	CO3	T1, R1	
29.	X chart, R Chart	1	20.08.2025		TLM1	CO3	T1, R1	
30.	C Chart, P Chart	1	23.08.2025		TLM1	CO3	T1	
Technical Training 25.08.2025 to 06.09.2025 MID-I 08.09.2025 to 13.09.2025								
31.	Simple problems	1	15.09.2025		TLM1	CO3	T1	
32.	Acceptance sampling, Sampling plans	1	16.09.2025		TLM1	CO3	T1, R1	
33.	Deming's contribution to quality	1	17.09.2025		TLM1	CO3	T1	
34.	Materials management Meaning and objectives	1	20.09.2025		TLM1	CO3	T1, R1	
35.	Inventory control & Need for inventory control	1	22.09.2025		TLM1	CO3	T1, R1	
36.	Purchase procedure, Store records	1	23.09.2025		TLM1	CO3	T1	
37.	EOQ	1	24.09.2025		TLM3	CO3	T1	
38.	ABC analysis	1	27.09.2025		TLM1	CO3	T2	
39.	Stock levels	1	29.09.2025		TLM1	CO3	T1	
No. of classes required to complete UNIT-III		**13**			**No. of classes taken:**			

UNIT-IV: HUMAN RESOURCE MANAGEMENT (HRM)

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
40.	Introduction	1	01.10.2025		TLM1	CO4	T1	
41.	Concepts of HRM	1	04.10.2025		TLM1	CO4	T1	

42.	Basic functions of HR manager	1	06.10.2025		TLM1	CO4	T1, R2	
43.	Man power planning	1	07.10.2025		TLM3	CO4	T1, R2	
44.	Recruitment	1	08.10.2025		TLM1	CO4	T1, R2	
45.	Selection,	1	11.10.2025		TLM1	CO4	T1, R1	
46.	Training & developmemt	1	13.10.2025		TLM1	CO4	T1, R1	
47.	Placement	1	14.10.2025		TLM1	CO4	T1	
48.	Wage and salary administration	1	15.10.2025		TLM3	CO4	T1, R1	
49.	Promotion, Transfers Separation	1	18.10.2025		TLM1	CO4	T1, R1	
50.	Performance appraisal	1	20.10.2025		TLM1	CO4	T1	
51.	Job evaluation	1	22.10.2025		TLM3	CO4	T1	
52.	Merit rating	1	25.10.2025		TLM3	CO4	T1	
No. of classes required to complete UNIT-IV		**13**			**No. of classes taken:**			

UNIT-V: PROJECT MANAGEMENT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
53.	Introduction	1	27.10.2025		TLM1	CO5	T1,R2	
54.	Early techniques in project management	1	28.10.2025		TLM1	CO5	T1, R2	
55.	Network analysis	1	29.10.2025		TLM1	CO5	T1,R2	
56.	Programme Evaluation and Review Technique (PERT)	1	01.11.2025		TLM1	CO5	T1,R2	
57.	Problems	1	03.11.2025		TLM1	CO5	T1,R2	
58.	Critical path method (CPM)	1	04.11.2025		TLM1	CO5	T1, R2	
59.	Identifying critical path	1	05.11.2025		TLM1	CO5	T1,R2	
60.	Problems	1	08.11.2025		TLM1	CO5	T1,R2	
61.	Probability of completing project within given time	1	10.11.2025		TLM1	CO5	T1,R2	
62.	Project cost analysis	1	11.11.2025		TLM1	CO5	T1, R2	
63.	Problems	1	12.11.2025		TLM1	CO5	T1,R2	
64.	project crashing	1	15.11.2025		TLM1	CO5	T1,R2	
No. of classes required to complete UNIT-V		**12**			**No. of classes taken:**			

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

Part – C

EVALUATION PROCESS:

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1: Pursue higher education, entrepreneurship and research to compete at global level.

PEO2: Design and develop products innovatively in the area of computer science and engineering and in Other allied fields.

PEO3: Function effectively as individuals and as members of a team in the conduct of interdisciplinary Projects and even at all the levels with ethics and necessary attitude.

PEO4: Serve ever-changing needs of the society with a pragmatic perception.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

PO1 - Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 - 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.

PO3 - 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.

PO4 - 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.

PO5 - 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.

PO6 - 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.
PO7 - 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.
PO8 - Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9 - Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10 - 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.
PO11 - Project Management and Finance: Demonstrate knowledge and understanding of the ring and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12 - 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.

PROGRAM SPECIFIC OUTCOMES (PSOS):

PSO1: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.
PSO2: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3: To inculcate an ability to analyze, design and implement database applications.

Mr. V. Sankararao	Dr. A. Nageswara Rao	Mr. J. Subba Reddy	Dr. M.B.S.Sreekara Reddy
Course Instructor	Course Coordinator	Module Coordinator	HoD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(An Autonomous Institution since 2010)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
An ISO 21001:2018, 14001:2015, 50001:2018 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. P. NAGABABU
Course Name & Code : Continuous Integration and Continuous Delivery using DevOps(20CSS4)
L-T-P Structure : 1-0-2 **Credits:** 2
Program/Sem/Sec : B.Tech., CSE, VII-Sem., Section – C. **A.Y.:** 2025-26

PRE-REQUISITE: Basic knowledge of certain basic programming languages such as Java, and Python.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

This course is designed to provide the core education necessary to build your DevOps vocabulary and to understand its principles and practices. With the help of key DevOps concepts and terminology, real-life case studies, examples and interactive group discussions and exercises, you will acquire a fundamental understanding of DevOps.

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

CO1	Understand the why, what, and how of DevOps adoption(**Understand – L2**)
CO2	Attain literacy on DevOps(**Apply L3**)
CO3	Align capabilities required in the team and create an automated CICD pipeline using a stack of tools(**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	1	-	2	-	2	-	-	-	-	-	2	2	3	-	-
CO2	1	-	2	-	2	-	-	-	-	-	2	2	-	-	-
CO3	1	-	2	-	2	-	-	-	-	-	2	2	-	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1- Low **2** –Medium **3-** High

REFERENCE BOOKS:

R 1	Learning Continuous Integration with Jenkins: A beginner's guide to implementing Continuous Integration and Continuous Delivery using Jenkins - Nikhil Pathania ,Packt publication[https://www.amazon.in/Learning-Continuous-Integration-JenkinsPathania/dp/1785284835]
R 2	Jenkins 2 – Up and Running: Evolve Your Deployment Pipeline for Next Generation Automation - Brent Laster, O'Reilly publication [https://www.amazon.in/Jenkins-2- Running-Brent-Laster/dp/1491979593]
R 3	https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fapp%2Ftoc%2Flex_auth_01338269041100390473 5_shared%2Foverview[Software Engineering and Agile software development]
R 4	https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fviewer%2Fhtml%2Flex_auth_0135015781949767681046 7[Development & Testing with Agile: Extreme Programming]
R 5	https://infyspringboard.onwingspan.com/web/en/login?ref=%2Fviewer%2Fhtml%2Flex_auth_01353898917192499226_shared[DevOps CICD]

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	02-07-2025		**DM5**	
2.	Module-2	3	09-07-2025		**DM5**	
3.	Module-3	3	16-07-2025 & 23-07-2025		**DM5**	
4.	Module-4	3	30-07-2025		**DM5**	
5.	Module-5	3	06-08-2025& 13-08-2025		**DM5**	
6.	Module-6	3	20-08-2025		**DM5**	
7.	Module-7	3	03-09-2025& 17-09-2025		**DM5**	
8.	Module-8	3	24-09-2025		**DM5**	
9.	Module-9	3	01-10-2025& 08-10-2025		**DM5**	
10.	Module-10	3	15-10-2025		**DM5**	
11.	Module-11	3	22-10-2025& 29-10-2025		**DM5**	
12.	Module-12	3	05-11-2025		**DM5**	
13.	Internal exam	3	12-11-2025			

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
Report	10
Quality of Work	10
Presentation	20
Interaction /Queries	10
Total	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	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	Ms. B.Usha Rani	Dr.Y.VIJAY BHASKAR REDDY	Dr.S.Nagarjuna Reddy
Signature				