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
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
hodcse@lbrce.ac.in, cseoffice@lbrce.ac.in, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms.M.Swathi
Course Name & Code : GENERATIVE AI & 23IT10
L-T-P Structure : 4-1-0 **Credits:** 3
Program/Sem/Sec : B.Tech VII Sem CSE – A Section **A.Y.:** 2026-27

PREREQUISITE: Machine Learning Fundamentals, Deep Learning Basics

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of this course is

- Understand the basics of Generative AI.
- Know the basics of Text Generation.
- Understand the process of generating videos.
- Know about GAN and its variants.

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

CO1	Describe the fundamental concepts, types of generative models (GANs, VAEs), and the ethical challenges associated with Generative AI. **(Understand-L2)**
CO2	Explain the architecture of Large Language Models (BERT, GPT), the mechanics of Transformers, and the principles of Prompt Engineering. **(Understand-L2)**
CO3	Summarize the working principles of image generation techniques including GANs, Variational Auto encoders, and Stable Diffusion models. **(Understand-L2)**
CO4	Recognize the applications of generative models in creative domains such as painting, music, and style transfer, including the role of autonomous agents. **(Remember - L1)**
CO5	Identify open-source models, programming frameworks (Lang Chain, Hugging Face), and strategies for training, fine-tuning, and deploying generative models. **(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	3	1				3	2	3				1	1	2	-
CO2	3	1	1	1						1		1	1	2	-
CO3	3	1	1	1									1	2	-
CO4	2					3			1				1	2	-
CO5	2								1		2	1	2	2	-
1 - Low						**2** –Medium						**3** – High			

Text Books:

T1. Denis Rothman, for Natural Language Processing and Computer Third Edition ,Packt Books, 2024

Reference Books:

R1. David Foster, Deep Books, 2024.

R2. Altaf Rehmani, AI for BlueRose One, 2024.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Generative AI

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	CEOs and COs Discussion, Introduction to Generative AI	1	29-06-2026		TLM1 & TLM2	
2	Historical Overview of Generative Modeling, Importance of Generative AI	1	01-07-2026		TLM1 & TLM2	
3	Generative Modeling vs Discriminative Modeling	1	02-07-2026		TLM1 & TLM2	
4	Types of Generative Models – Overview	1	03-07-2026		TLM1 & TLM2	
5	Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs)	1	04-07-2026		TLM1 & TLM2	
6	Tutorial	1	06-07-2026		TLM3	
7	Autoregressive Models and Vector Quantized Diffusion Models	1	08-07-2026		TLM1 & TLM2	
8	Probabilistic Modeling and Generative Process	1	10-07-2026		TLM1 & TLM2	
9	Challenges of Generative Modeling	1	13-07-2026		TLM1 & TLM2	
10	Tutorial/Activity	1	15-07-2026		TLM3	
11	Ethical Aspects of AI and Responsible AI	1	16-07-2026		TLM1 & TLM2	
12	Future of Generative AI, Use Cases, Unit-I Revision	1	17-07-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Generative Models for Text

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13	Language Model Basics and Building Blocks of Language Models	1	18-07-2026		TLM1 & TLM2	
14	Transformer Architecture Overview	1	20-07-2026		TLM1 & TLM2	
15	Tutorial	1	22-07-2026		TLM3	
16	Encoder and Decoder Architecture	1	23 -07-2026		TLM1 & TLM2	
17	Attention Mechanisms in Transformers	1	24-07-2026		TLM1 & TLM2	
18	Generation of Text using Language Models	1	25-07-2026		TLM1 & TLM2	
19	BERT Model Architecture	1	27-07-2026		TLM1 & TLM2	
20	Tutorial	1	29-07-2026		TLM3	
21	GPT Models Architecture	1	30-07-2026		TLM1 & TLM2	
22	Autoencoding and Regression Models	1	31-07-2026		TLM2 & TLM4	

23	Exploring ChatGPT Applications	1	01-08-2026		TLM1 & TLM2	
24	Prompt Engineering – Designing Effective Prompts	1	03-08-2026		TLM1 & TLM2	
25	Tutorial/Activity	1	05-08-2026		TLM3 & TLM 7	
26	RLHF and Retrieval Augmented Generation (RAG)	1	06-08-2026		TLM1 & TLM2	
27	Multimodal LLMs, Hallucination Issues, Unit-II Revision	1	07-08-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-II: 15				**No. of classes taken:**		

I MID EXAMINATIONS 24-08-2026 TO 29-08-2026

UNIT-III: Generation of Images

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
28	Introduction to GANs	1	10-08-2026		TLM1 & TLM2	
29	Tutorial	1	12-08-2026		TLM3	
30	Adversarial Training Process and Nash Equilibrium	1	13-08-2026		TLM1 & TLM2	
31	Variational Autoencoders (VAEs)	1	14-08-2026		TLM1 & TLM2	
32	Encoder–Decoder Architectures	1	17-08-2026		TLM1 & TLM2	
33	Tutorial	1	19-08-2026		TLM3	
34	Stable Diffusion Models	1	20-08-2026		TLM1 & TLM2	
35	Transformer-Based Image Generation	1	21-08-2026		TLM1 & TLM2	
36	CLIP Model and Vision Transformers (ViT)	1	22-08-2026		TLM2 & TLM4	
37	DALL-E2 and DALL-E3	1	31-08-2026		TLM1 & TLM2	
38	Tutorial/Activity	1	02-09-2026		TLM3 & TLM 7	
39	GPT-4V Applications	1	03-09-2026		TLM1 & TLM2	
40	Mode Collapse and Stability Issues	1	05-09-2026		TLM1 & TLM2	
41	Unit-III Revision	1	07-09-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-III: 14				**No. of classes taken:**		

UNIT-IV: Generation of Painting, Music and Play

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42	Variants of GANs and Types of GANs	1	09-09-2026		TLM1 & TLM2	
43	Tutorial	1	10-09-2026		TLM3	
44	CycleGAN Architecture	1	11-09-2026		TLM1 & TLM2	
45	Using CycleGAN to Generate Paintings	1	16-09-2026		TLM2 & TLM4	
46	Neural Style Transfer	1	17-09-2026		TLM1 & TLM2	
47	Style Transfer Applications	1	18-09-2026		TLM2 & TLM4	

48	Music Generating RNN	1	19-09-2026		TLM1 & TLM2	
49	MuseGAN	1	21-09-2026		TLM1 & TLM2	
50	Autonomous Agents	1	23-09-2026		TLM1 & TLM2	
51	Tutorial/Activity	1	24-09-2026		TLM3 & TLM 7	
52	Deep Q Algorithm and Actor-Critic Network	1	25-09-2026		TLM1 & TLM2	
53	Unit-IV Revision	1	26-09-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Open Source Models and Programming Frameworks

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
54	Training and Fine-Tuning of Generative Models	1	28-09-2026		TLM1 & TLM2	
55	GPT4All, Transfer Learning and Pretrained Models	2	30-09-2026 & 01-10-2026		TLM1 & TLM2	
56	Tutorial	1	03-10-2026		TLM3	
57	Training Vision Models and Google Copilot	1	05-09-2026		TLM1 & TLM2	
58	Programming Large Language Models	1	07-10-2026		TLM2 & TLM4	
59	LangChain Framework	1	08-10-2026		TLM2 & TLM4	
60	Open Source Models – LLaMA	1	09-10-2026		TLM1 & TLM2	
61	Tutorial/Activity	1	12-10-2026		TLM3 & TLM 7	
62	Programming for TimeSformer	1	14-10-2026		TLM1 & TLM2	
63	Deployment of Generative Models				TLM1 & TLM2	
64	Hugging Face Platform	1	15-10-2026		TLM2 & TLM4	
65	Unit-V Revision				TLM1 & TLM2	
No. of classes required to complete UNIT-V: 11				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project
TLM7	Activity		

Content Beyond Syllabus

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes (COs)	Text Book Followed	HOD Sign
1	Agentic AI and Multi-Agent Systems	1	16-10-2026		TLM2, TLM4 & TLM6	CO4, CO5	R1	
2	Retrieval Augmented Generation (RAG) using LangChain Applications	1	17-10-2026		TLM2 & TLM4	CO2, CO5	R1	
3	Fine-Tuning Open Source LLMs using LoRA and PEFT	1	26-10-2026		TLM2 & TLM4	CO5	R1	
4	AI Coding Assistants (GitHub Copilot, Cursor AI, Code Generation Tools)	1	28-10-2026		TLM2, TLM4 & TLM6	CO5	R2	
5	Recent Trends in Generative AI (GPT-4o, Multimodal AI, AI Agents)	1	29-10-2026		TLM2 & TLM5	CO1, CO5	R2	
No. of Classes		5			No. of classes taken:			

Use Cases

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes (COs)	HOD Sign
1	Text Content Generation	1	30-10-2026		Hands-on	CO4, CO5	
2	Image and Multimedia Generation	1	31-10-2026		Hands-on	CO4, CO5	

II MID EXAMINATIONS 02-11-2026 TO 07-11-2026

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
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.M.Swathi**	**Mr. D. Anil Kumar**	**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.P.Veera Swamy
Course Name & Code **:** CONSTITUTION OF INDIA & 23MC05
L-T-P Structure **: 2-0-0** **Credits:** 0
Program/Sem/Sec : B.Tech/VII SEM /A **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Nil
Course Objectives: The main objectives of the course are to

1. To make students understand the historical background and philosophy of the Indian Constitution.
2. To make students acquire knowledge of Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties.
3. To make students understand the structure, powers, and functions of the Legislature, Executive, and Judiciary.
4. To make students analyze the role and functioning of local self-government institutions and grassroots democracy.
5. To make students understand the role of the Election Commission and constitutional bodies for the welfare of marginalized sections.

COURSE OUTCOMES (COs): Upon successful completion of this course, the student should be able to

CO1	Explain the history, philosophy, and salient features of the Indian Constitution. **(Understand - L2)**
CO2	Describe Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties. (**Understand-L2)**
CO3	List the powers and functions of the Legislature, Executive, and Judiciary. **(Remember-L1)**
CO4	Interpret the structure and functioning of local administration and Panchayati Raj institutions. (**Understand-L2)**
CO5	Explain the role of the Election Commission and welfare institutions for SC/ST/OBC and women. **(Understand-L2)**

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

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

TEXTBOOKS:

T1	The Constitution of India, 1st Edition, (Bare Act), Government Publication, 1950
T2	Framing of Indian Constitution, 1st Edition, Dr. S. N. Busi, Dr. B. R. Ambedkar, 2015

REFERENCE BOOKS:

R1	Indian Constitution Law, 7th Edition, M. P. Jain, Lexis Nexis, 2014

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**History of Making of the Indian Constitution:** History	1	29/06/2026		TLM 2	
2.	Drafting Committee, (Composition & Working)	1	02/07/2026		TLM 2	
3.	**Philosophy of the Indian Constitution-** Preamble	1	06/07/2026		TLM 2	
4.	Salient, Features	1	09/07/2026		TLM 2	
No. of classes required to complete UNIT-I: 4				**No. of classes taken:**		

UNIT-II

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
5.	**Contours of Constitutional Rights & Duties:** Fundamental Rights	1	13/07/2026		TLM 2	
6.	Right to Equality, Right to Freedom,	1	16/07/2026		TLM 2	
7.	Right against Exploitation	1	23/07/2026		TLM 2	
8.	Right to Freedom of Religion	1	27/07/2026		TLM 2	
9.	Cultural and Educational Rights	1	30/07/2026		TLM 2	
10.	Right to Constitutional Remedies	1	03/08/2026		TLM 2	
11.	Directive Principles of State Policy	1	06/08/2026		TLM 2	
12.	Fundamental Duties	1	10/08/2026		TLM 2	
13.	**Activity Based Learning**	1	17/08/2026		TLM 2	
No. of classes required to complete UNIT-II: 08				**No. of classes taken:**		
MID-1 Examinations From 24-08-2026 to 29-08-2026						

UNIT-III

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14.	**Organs of Governance:** Parliament, Composition	1	31/08/2026		TLM 2	
15.	Qualifications and Disqualifications, Powers and Functions	1	03/09/2026		TLM 2	
16.	**Executive-** President, Governor, Council of Ministers, Judiciary	1	07/09/2026		TLM 2	
17.	Council of Ministers, Judiciary, Appointment and Transfer of Judges	1	10/09/2026		TLM 2	
18.	Qualifications, Powers and Functions	1	17/09/2026		TLM 2	
No. of classes required to complete UNIT-III: 05				**No. of classes taken:**		

UNIT-IV

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
19.	**Retrieval-Augmented Generation & LangChain Workflows:** Limitations of LLM internal	1	21/09/2026		TLM 2	
20.	**Local Administration:** District's Administration head, Municipalities: Introduction	1	24/09/2026		TLM 2	
21.	Mayor and role of Elected Representative CEO of Municipal Corporation	1	28/09/2026		TLM 2	
22.	Panchayati raj: Introduction, PRI: Zila Panchayat	1	01/10/2026		TLM 2	
23.	Elected officials and their roles, CEO Zila Pachayat: Position and role	1	05/10/2026		TLM 2	
24.	Block level: Organizational Hierarchy (Different departments),	1	08/10/2026		TLM 2	
25.	Village level: Role of Elected and Appointed officials, Importance of grass root democracy.	1	12/10/2026		TLM 2	
No. of classes required to complete UNIT-IV: 07				**No. of classes taken:**		

UNIT-V

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	**Election Commission:** Election Commission: Role and Functioning	1	12/10/2026		TLM 2	
27.	Chief Election Commissioner and EC, State EC: Role and Functioning	1	15/10/2026		TLM 2	
28.	Institute and Bodies for the welfare of SC/ST/OBC and women	1	26/10/2026		TLM 2	
29.	**Activity Based Learning**	1	29/10/2026		TLM 2	
No. of classes required to complete UNIT-V: 4				**No. of classes taken:**		
MID-2 Examinations from 02-11-2026 to 07-11-2026						

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	Constitutional Amendments in India	1	29/10/2026		**TLM 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

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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 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.
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PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr.P.Veera Swamy**	**Dr.Ch.Rajendra Babu**	**Dr.Ch.Rajendra Babu**	**Dr.S.Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms.M.Swathi
Course Name & Code : **PROMPT ENGINEERING (23AMS1)**
L-T-P Structure : **1-0-3** **Credits:** 2
Program/Sem/Sec : B.Tech/CSE/VII/A Sec **A.Y.:** 2026-27

PREREQUISITE: Basics of Computer Knowledge

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objectives of the course are to

- Apply iterative prompting for clarity and context.
- Create varied prompts to steer model outputs.
- Construct chain-of-thought and structured prompts.
- Develop retrieval-augmented pipelines to ground outputs.
- Evaluate LLM agents and multimodal apps for ethics and robustness.

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

CO1: Understand the fundamental principles, techniques, and design patterns of effective prompt engineering. **(Understand-L2)**
CO2: Apply prompt engineering techniques (e.g., zero-shot, few-shot, chain-of-thought) to enhance model performance. **(Apply-L3)**
CO3: Utilize Large Language Models (LLMs) to generate text, images, and code for creative and practical applications. **(Apply-L3)**
CO4: Evaluate LLM outputs using metrics like accuracy and relevance and refine prompts to minimize hallucinations and bias. **(Evaluate-L5)**
CO5: Implement ethical, safe, and secure prompting strategies to comply with data privacy and legal standards. **(Apply-L3)**

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO 2	PSO 3
CO1	3	2	–	–	2	–	–	–	–	–	–	2	2	1	–
CO2	2	3	2	1	3	–	–	–	–	–	–	2	3	2	1
CO3	2	2	3	2	3	–	–	–	1	2	–	2	3	3	2
CO4	2	3	2	3	2	–	–	2	–	1	–	2	2	2	1
CO5	–	–	1	–	2	3	2	3	–	1	–	2	2	2	–

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

PART-B:

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	**Environment & Connectivity:** Install required packages (e.g., transformers, OpenAI); securely configure the API key; run a simple "Hello, world" prompt to verify model access.	03	30-06-2026		
2.	**Foundations of Prompt Engineering:** Introduction to prompt engineering, definition, distinction between prompt engineering and model fine-tuning, motivation, benefits, and anatomy of a prompt.	01	02-07-2026		
3.	**Baseline vs. Enhanced Prompts:** Execute a naïve prompt ("Write a one-paragraph bio of Ada Lovelace.") and an enhanced prompt that adds role framing, specificity, and explicit format instructions; compare both outputs for relevance, completeness, and style.	03	07-07-2026		
4.	**Python Environment & LLM Connectivity:** Install required Python packages, configure API keys securely, connect to an LLM, and execute a simple "Hello, World" prompt.	01	09-07-2026		
5.	**Iterative Refinement on a Simple Task:** Summarize the plot of the Shakespearean play Romeo and Juliet in two sentences through three rounds of prompt tweaking: a. Minimal instruction. b. Addition of length and style constraints. c. Specification of key content elements (setting and theme). Document how each iteration changes and improves the result.	03	14-07-2026		
6.	**Effective Prompt Design:** Core principles of effective prompt design, iterative prompting lifecycle, common prompt pitfalls, and prompt remediation techniques.	01	16-07-2026		
7.	**Diagnosing Prompt Failures & Edge Cases:** Craft a vague or contradictory prompt; analyze the failure mode (ambiguity, missing context, or format errors); refine the prompt by adding examples or clarifying instructions.	03	21-07-2026		
8.	**Advanced Prompt Patterns:** Enhanced prompt anatomy, contextual details, explicit output specifications, prompt structuring, template design, and few-shot in-context prompting.	01	23-07-2026		
9.	**Few-Shot vs. Zero-Shot Comparison:** Design and execute a zero-shot prompt and a few-shot prompt (with 2–3 exemplar input-output pairs) for a chosen text task (e.g., sentiment classification or translation); compare outputs for accuracy, consistency, and adherence to	03	28-07-2026		

	examples.				
10.	**Role-Based & Constraint Prompting:** Role-based prompting, negative prompting, constraint specification, instruction enforcement, and iterative prompt refinement.	01	30-07-2026		
11.	**Role-Based & Negative Prompting:** Craft a role-based prompt to establish a specific persona (e.g., "You are a financial advisor…"); then create a negative prompt to suppress undesired content (e.g., "Do not mention any brand names"); evaluate how each influences the model's response.	03	04-08-2026		
12.	**Structured Output & Reasoning:** Prompting for structured outputs including lists, Markdown tables, JSON, YAML, chain-of-thought prompting, and task decomposition.	01	6-08-2026		
13.	**Constraint Specification & Iterative Refinement:** Select an open-ended task (e.g., summarizing a technical article); issue a basic prompt; identify failures in length or format; refine the prompt by adding explicit constraints (word count, bullet format, etc.); document improvements over two refinement cycles.	03	11-08-2026		
14.	**Introduction to Retrieval-Augmented Generation (RAG):** Limitations of LLM knowledge, need for external data sources, RAG architecture, indexing, retrieval, and generation.	01	13-08-2026		
15.	**Structured Format Prompting:** Instruct the model to output information as bullet lists and Markdown tables (e.g., "List three benefits of daily exercise in a Markdown table with columns 'Benefit' and 'Description.'"); verify the output matches the requested structure.	03	18-08-2026		
16.	**LangChain & LCEL Fundamentals:** Introduction to LangChain, LangChain Expression Language (LCEL), document loading, text splitting, embeddings, and vector stores.	01	20-08-2026		
17.	**JSON/YAML Generation:** Provide a brief dataset description (e.g., three books with title, author, publication year) and prompt the model to produce valid JSON or YAML; use a parser to validate syntax and refine the prompt if errors occur.	03	01-09-2026		
18.	**Building a Basic RAG Pipeline:** Construct a simple retrieval-generation workflow, retrieve relevant document chunks, generate responses, and compare results with direct prompting.	01	03-09-2026		
19.	**Chain-of-Thought & Task Decomposition:** Present a multi-step problem (e.g., a logic puzzle) and apply zero-shot CoT prompting (e.g., "Let's think step by step. Explain your reasoning before the final answer."); separately, decompose the problem into sequential sub-	03	08-09-2026		

	questions, collect partial answers, combine them, and compare accuracy against a direct-answer baseline.				
20.	**Introduction to LLM Agents:** Basic architecture of LLM agents, tool/function calling, and implementing a simple calculator agent.	01	10-09-2026		
21.	**Building a Simple LCEL Chain:** Create a minimal LCEL script that accepts a fixed instruction (e.g., "Summarize this text: …"), passes it to an LLM, and prints the result; verify end-to-end execution.	03	15-09-2026		
22.	**Multimodal AI:** Overview of multimodal AI models (VLMs), text-to-image prompting, image understanding, and prompt engineering for multimodal applications.	01	17-09-2026		
23.	**Basic Data Indexing for RAG:** Load a small collection of documents; split them into uniform chunks (e.g., 200 tokens); generate embeddings for each chunk; store them in an in-memory vector store; inspect for consistency **Constructing & Running a Basic RAG Chain:** Build a pipeline that: a. Receives a user query. b. Retrieves the top-k relevant chunks. c. Constructs a combined prompt with context + query. d. Sends it to the LLM. e. Returns the answer. Test with sample queries and compare factual accuracy against a prompt without retrieval.	03	22-09-2026		
24.	**Prompt Evaluation Techniques:** Manual evaluation methods, heuristic checks for accuracy, relevance, format compliance, and introduction to LLM-as-Judge.	01	24-09-2026		
25.	**Building a Simple LLM Agent:** Register a tool (e.g., a calculator function) and craft prompts that instruct the agent to invoke it when required; implement using LangChain or a function-calling API; test on queries requiring tool execution. **Multimodal Prompting Exploration:** Generate images from detailed text prompts; feed one generated image into an image-understanding model or API with an appropriate prompt; compare the returned caption to the original prompt to evaluate alignment.	03	29-09-2026		
26.	**Prompt Security & Safety:** Prompt injection attacks, sensitive information risks, prompt-based mitigation strategies, and robustness techniques. **Ethics in Prompt Engineering:** Bias, misinformation, data privacy, responsible AI practices, and ethical considerations in prompt engineering.	01	01-10-2026		

27.	**Prompt Evaluation & Ethics Workshop:** a. Select two existing prompts and generate multiple outputs; apply manual heuristic checks for accuracy, relevance, and format compliance. b. Use an "LLM-as-Judge" prompt (e.g., "Rate these outputs on a scale of 1–5 for clarity and correctness.") to automate evaluation. c. Design a prompt-injection test (e.g., "Ignore previous instructions…"), observe the response, then refine system prompts to mitigate the vulnerability.	03	06-10-2026		
28.	**Prompt-Driven Application Development:** Introduction to Streamlit and Gradio for building and deploying prompt-driven AI applications. **Course Review & Integrated Hands-on Exercise:** Review of all concepts, integrated prompt engineering exercise combining prompting, RAG, agents, structured outputs, evaluation, and discussion on continuous learning in prompt engineering.	01	08-10-2026		
29.	Internal Exam	03	13-10-2026		

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Day to Day Work:	15
Internal Test	15
Continuous Internal Assessment	30
Procedure	20
Execution & Results	30
Viva-voce	20
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

	information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
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.M.Swathi**	**Dr.K.V.Pandu Rangarao**	**Dr. K.Devi Priya**	**Dr. S. Nagarjuna Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING- SECTION -A

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.M.S.CHAKRAVARTHY
Course Name & Code : HUMAN RESOURCES & PROJECT MANAGEMENT (23HRPM01)
L-T-P Structure : **2-0-0** **Credits:** 2
Program/Sem/Sec : B.Tech/VI SEM /A **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Basic knowledge of management principles and organizational functions.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To explain the fundamentals of Human Resource Management and HR planning.
- To introduce training, development, performance appraisal, and career management.
- To discuss project management concepts, life cycle, and resource allocation.
- To compare project types and their unique management challenges.
- To apply project planning, implementation, control, and evaluation practices.

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

CO	Outcome	Bloom's Level
CO1	Explain fundamentals of HRM and HR planning	L2 – Understand
CO2	State training, development, and performance appraisal techniques	L1 – Remember
CO3	Interpret project management concepts and life cycle stages	L2 – Understand
CO4	Compare project types and their management challenges	L2 – Understand
CO5	Apply project planning, implementation, and evaluation techniques	L3 – Apply

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

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

TEXTBOOKS:

T1	Robert L. Mathis, John H. Jackson, Manas Ranjan Tripathy, *Human Resource Management*, Cengage Learning, 2016.
T2	Sharon Pande & Swapnalekha Basak, *Human Resource Management: Text and Cases*, Vikas Publishing, 2016.
T3	Stewart R. Clegg, Torgeir Skyttermoen, Anne Live Vaagaasar, *Project Management*, Sage Publications, 2021.
T4	K. Nagarajan, *Project Management*, New Age International Publishers, 2017.

REFERENCE BOOKS:

R1	Subba Rao P, *Personnel and Human Resource Management*, Himalaya Publications, 2013.
R2	K. Aswathappa, *Human Resource and Personnel Management*, Tata McGraw Hill, 2013.
R3	Prasanna Chandra, *Projects: Planning, Analysis, Selection, Financing, Implementation and Review*, Tata McGraw Hill, 1998.
R4	Vasanth Desai, *Project Management*, Himalaya Publications, 2018.
R5	Lalitha Balakrishnan & Gowri, *Project Management*, Himalaya Publishing House, 2022.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: HRM Fundamentals

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 HRM, Nature, Scope of HRM	1	29/06/26		TLM1, 2	
2.	Functions of HRM	1	30/07/26		TLM1, 2	
3.	Role of HR Manager, Emerging Trends	1	01/07/26		TLM1, 2	
4.	E-HRM, HR Audit Models	1	06/07/26		TLM1, 2	
5.	HR Planning	1	07/07/26		TLM1, 2	
6.	Demand & Supply Forecasting	1	08/07/26		TLM1, 2	
7.	Job Design	1	13/07/26		TLM1, 2	
8.	Recruitment Sources	1	14/07/26		TLM1, 2	
9.	Selection Procedures	1	15/07/26		TLM1, 2	
10.	Tutorial /Activity / Assignment	2	21/07/26		TLM 3/7	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: HRD & Performance Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	HRD	1	22/07/26		TLM1,2	
12.	HR Accounting Models	1	23/07/26		TLM1,2	
13.	Training & Development Methods	2	28/07/26		TLM1,2	
14.	Performance Appraisal Techniques	1	29/07/26		TLM1,2	
15.	Career Development	1	03/08/26		TLM1,2	
16.	Counseling and Group Interaction	1	04/08/26		TLM1,2	
17.	Tutorial /Activity / Assignment	2	05/08/26		TLM 3/7	
No. of classes required to complete UNIT-II: 9				**No. of classes taken:**		

UNIT-III: Project Management Basics

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Concept of Resource Management	1	05/08/26		TLM1,2	
19.	Project Environment	1	10/08/26		TLM1,2	
20.	Types of Projects	1	11/08/26		TLM1,2	
21.	DPR and Project Networks	1	12/08/26		TLM1,2	
22.	Project Life Cycle,	1	17/08/26		TLM1,2	
23.	Project Proposals, Monitoring Progress	1	18/08/26		TLM1,2	
24.	Project Appraisal & Selection,	1	19/08/26		TLM1,2	
25.	80-20 Rule, Communication Matrix	1	31/08/26		TLM1,2	
26.	Tutorial /Activity / Assignment	2	02/09/26		TLM 3/7	
No. of classes required to complete UNIT-III: 10				**No. of classes taken:**		

UNIT-IV: Project Challenges

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Unique Management Challenges for Different Project Types	3	09/09/26		TLM1,2	
28.	Abandonment Analysis	1	14/09/26		TLM1,2	
29.	Tutorial /Activity / Assignment	3	21/09/26		TLM 3/7	
No. of classes required to complete UNIT-IV: 7				**No. of classes taken:**		

UNIT-V: Project Implementation & Review

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.	Forms of Project Organization	02	23/09/26			
31.	Project Planning & Control	03	30/09/26			
32.	Human Aspects of Project Management	02	06/10/26			
33.	Prerequisites for Successful Implementation	03	13/10/26			
34.	Project Review	1	26/10/26			
35.	Performance Evaluation, Abandonment Analysis	1	27/10/26			
36.	Tutorial / Activity / Assignment	1	28/10/26		TLM3/7	
No. of classes required to complete UNIT-V: 13				**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
1.	revision	50	31-10-2026		**TLM 3**	

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 (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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	Apply knowledge of management and HRM principles.
PO 2	Analyse organizational and project challenges.
PO 3	Design HR and project solutions with ethical considerations.
PO 4	Conduct investigations and appraisals of HR & project practices.
PO 5	Use modern HRM and project management tools.
PO 6	Apply ethical principles and commit to professional ethics, responsibilities, and norms in HRM and project practices.
PO 7	Understand the impact of HR and project management solutions in societal and environmental contexts, and demonstrate the need for sustainable development.
PO 8	Function effectively as an individual, and as a member or leader in diverse teams and multidisciplinary settings..
PO 9	Communicate effectively on HRM and project activities with the academic, professional, and societal community through reports, presentations, and clear instructions.
PO 10	Demonstrate knowledge and understanding of management and financial principles, and apply these to manage projects and organizational resources.
PO 11	Recognize the need for lifelong learning and develop the ability to engage in continuous professional development in HRM and project management.
PO 12	Integrate global perspectives, adaptability, and innovation in HRM and project practices to meet evolving organizational needs.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Apply HRM practices in organizational contexts.
PSO 2	Design and manage projects effectively across industries.
PSO 3	Design and manage projects effectively across industries.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**M.S.CHAKRAVARTHY**			**Dr. S. Nagarjuna Reddy**
Signature				

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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. B. Pangedaiah
Course Name & Code : Utilization of Electrical Energy & 23EE83
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech, CSE-A., VII-Sem. A.Y : 2026-27

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. **(Understand-L2)**
CO 2	Analyze performance of various lighting schemes. **(Understand-L2)**
CO 3	Analyze the performance of electric drive systems. **(Understand-L2)**
CO 4	Understand the different schemes of traction and its main components **(Understand-L2)**
CO5	Understand various tariff methods and power factor improvement techniques. **(Understand-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 1	PSO 2	PSO 3
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. V K Mehta & Rohit Mehta, "Principles of Power System", Revised Edition, S.Chand Publications, 2022.

R2. A.Chakrabarthi, M.L.Soni, P.V.Gupta and U.S.Bhatnagar, "A Textbook on Power system Engineering", Dhanpat Rai Publishing Company (P) Ltd., 2008.

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	29-06-2026		TLM1 &TLM2	
2.	Advantages: Electric heating	1	01-07-2026		TLM1 &TLM2	
3.	methods of electric heating	1	02-07-2026		TLM1 &TLM2	
4.	Resistance heating	1	04-07-2026		TLM1 &TLM2	
5.	Induction heating	1	06-07-2026		TLM1 &TLM2	
6.	dielectric heating	1	08-07-2026		TLM1 &TLM2	
7.	ARC Furnace-Direct furnaces	1	09-07-2026		TLM1 &TLM2	
8.	ARC Furnace-indirect arc furnaces	1	11-07-2026		TLM1 &TLM2	
9.	Electric Welding: Resistance welding	1	13-07-2026		TLM1 &TLM2	
10.	Arc welding	1	15-07-2026		TLM1 &TLM2	
11.	Electric welding equipment	1	16-07-2026		TLM1 &TLM2	
12.	Comparison between AC and DC welding	1	18-07-2026		TLM1 &TLM2	
No. of classes required to complete UNIT-I: 12					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
13.	Introduction	1	20-07-2026		TLM1/TLM2	
14.	Nature of light	1	22-07-2026		TLM1/TLM2	
15.	Laws of illumination	1	23-07-2026		TLM1/TLM2	
16.	Laws of illumination	1	25-07-2026		TLM1/TLM2	
17.	Lighting schemes, sources of light	1	27-07-2026		TLM1/TLM2	
18.	Fluorescent Lamp, CFL and LED	1	29-07-2026		TLM1/TLM2	
19.	Sodium Vapor Lamp	1	30-07-2026		TLM1/TLM2	
20.	Neon lamps	1	01-08-2026		TLM1/TLM2	

21.	mercury vapor lamps	1	03-08-2026		TLM1/TLM2	
22.	Comparison between tungsten &fluorescent tubes	1	05-08-2026		TLM1/TLM2	
23.	Requirements of good lighting	1	06-08-2026		TLM1/TLM2	
24.	Street lighting	1	08-08-2026		TLM1/TLM2	
25.	Assignment/Quiz	2	10-08-2026, 12-08-2026		TLM3	
No. of classes required to complete UNIT-II: 14					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
26.	Introduction	1	31-08-2026		TLM1 &TLM2	
27.	Factors affecting selection of motor	1	02-09-2026		TLM1 &TLM2	
28.	Types of loads	1	03-09-2026		TLM1 &TLM2	
29.	Transient Characteristics of drives	1	05-09-2026		TLM1 &TLM2	
30.	Steady state characteristics of drives	1	07-09-2026		TLM1 &TLM2	
31.	Steady state characteristics of drives	1	09-09-2026		TLM1 &TLM2	
32.	Size of motor	1	10-09-2026		TLM1 &TLM2	
33.	Load Equalization	1	12-09-2026		TLM1 &TLM2	
34.	Industrial applications of drives	1	16-09-2026		TLM1 &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
35.	Introduction	1	17-09-2026		TLM1	
36.	Requirement of an ideal traction system	1	19-09-2026		TLM1	
37.	System for electric traction	1	21-09-2026		TLM1	
38.	Track electrification–the traction motor– train movement	1	23-09-2026		TLM1	
39.	Track electrification–the traction motor– train movement	1	24-09-2026		TLM1	
40.	Speed time curves for different services	1	26-09-2026		TLM1	

41.	Trapezoidal and quadrilateral speed time curves	1	28-09-2026		TLM1	
42.	Trapezoidal and quadrilateral speed time curves	1	30-09-2026		TLM1	
43.	Problems on train movement	1	01-10-2026		TLM1	
No. of classes required to complete UNIT-IV: 9					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
44.	Desirable characteristics	1	03-10-2026		TLM1 &TLM2	
45.	Types of Tariff	1	05-10-2026		TLM1 &TLM2	
46.	Flat rate	1	07-10-2026		TLM1 &TLM2	
47.	Block-rate	1	08-10-2026		TLM1 &TLM2	
48.	KVA maximum demand	1	10-10-2026		TLM1 &TLM2	
49.	Time of Day tariff	1	12-10-2026		TLM1 &TLM2	
50.	Disadvantages of low power factor	1	14-10-2026		TLM1 &TLM2	
51.	Advantages of improved p.f	1	15-10-2026		TLM1 &TLM2	
52.	Improvement devices	1	17-10-2026		TLM1 &TLM2	
53.	Power factor improvement using static capacitor	1	26-10-2026		TLM1 &TLM2	
54.	Most economical power factor	1	28-10-2026		TLM1 &TLM2	
55.	Location of power factor improvement devices from consumer	1	29-10-2026		TLM1 &TLM2	
No. of classes required to complete UNIT-V: 13					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
56.	Economic aspects in utilization of electrical energy	1	31-10-2026		TLM1/ TLM2	

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)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1.	Pursue a successful career in the area of Information Technology or its allied fields..
PEO2.	Exhibit sound knowledge in the fundamentals of Information Technology and apply practical experience with programming techniques to solve real world problems.
PEO3.	Able to demonstrate self-learning, life-long learning and work in teams on multidisciplinary projects.
PEO4.	Able to understand the professional code of ethics and demonstrate ethical behaviour, effective communication, team work and leadership skills in their job.

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):

PSO1	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power.
PSO2	Design and analyze electrical machines, modern drive and lighting systems.
PSO3	Specify, design, implement and test analog and embedded signal processing electronic systems.
PSO4	Design controllers for electrical and electronic systems to improve their performance..

Dr. B. Pangedaiah	Dr. B. Pangedaiah	Dr.M.S.Giridhar	Dr. P. Sobharani
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: M. Gayathri
Course Name & Code **:** DEEP LEARNING 23AM06
L-T-P Structure **: 3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/VII SEM /A **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Basic understanding of linear algebra, calculus, probability, and programming fundamentals, Python.

Course Objectives:

The main objectives of the course are to make students: • Understand the fundamentals of neural networks as well as some advanced topics such as recurrent neural networks, long short-term memory cells, and convolutional neural networks.

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

CO1	Understand the fundamental concepts of artificial neurons, perceptrons, and learning rules used in basic neural network models. **(Understand – L2)**
CO2	Apply feed-forward neural network architectures and backpropagation algorithms for supervised learning tasks. **(Apply – L3)**
CO3	Analyze various optimization and regularization techniques to improve deep neural network training performance. **(Analyze – L4)**
CO4	Demonstrate the working of RNNs, LSTMs, CNNs, and generative models (RBMs, DBMs) for sequential and visual data. **(Apply – L3)**
CO5	Apply GPT-based models for NLP, vision, and speech applications **(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	1	1	-	-	-	-	-	2	2	1	2	-
CO2	2	3	2	1	2	-	-	-	-	-	2	3	1	2	-
CO3	2	3	2	2	2	-	-	-	-	-	3	2	2	2	-
CO4	2	3	2	2	3	-	-	-	-	-	2	2	1	3	-
CO5	2	2	2	1	3	-	-	-	-	-	2	2	2	3	-
1 - Low **2 –**Medium **3 -** High															

TEXTBOOKS:

T1	Deep Learning, Ian Good fellow and Yoshua Bengio and Aaron Courville, MIT Press, 2016.

REFERENCE BOOKS:

R1	Neural Networks: A Systematic Introduction, RaúlRojas, 3.
R2	Pattern Recognition and Machine Learning, ChristopherBishop,2007
R3	Deep Learning with Python, François Chollet, Manning Publications,2017

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics

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's & PO'S	1	29/06/2026		TLM1, 2	
2.	Introduction	1	30/06/2026		TLM1, 2	
3.	Biological Neuron	2	2/07/2026 3/07/2026		TLM1, 2	
4.	Idea of computational units	1	04/07/2026		TLM1, 2	
5.	McCulloch–Pitts unit and Thresholding logic	3	06/07/2026 07/07/2026 09/07/2026		TLM1, 2	
6.	Linear Perceptron	2	10/07/2026 11/07/2026		TLM1, 2	
7.	Perceptron Learning Algorithm	2	13/07/2026 14/07/2026		TLM1, 2	
8.	Linear separability	1	16/07/2026		TLM1, 2	
9.	Convergence theorem for Perceptron Learning Algorithm	3	17/07/2026 18/07/2026 20/07/2026		TLM1, 2	
10.	Activity -1	1	21/07/2026		TLM 7	
No. of classes required to complete UNIT-I: 17				**No. of classes taken:**		

UNIT-II: Feed forward Networks

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.	Multilayer Perceptron	2	23/07/2026 24/07/2026		TLM1,2	
12.	Gradient Descent	2	25/07/2026 27/07/2026		TLM1,2	
13.	Backpropagation	2	28/07/2026 30/07/2026		TLM1,2	
14.	Empirical Risk Minimization	2	31/07/2026 01/08/2026		TLM1,2	
15.	Regularization	2	03/08/2026 04/08/2026		TLM1,2	

16.	Autoencoders	2	06/08/2026 07/08/2026		TLM1,2	
17.	Deep Neural Networks	3	08/08/2026 10/08/2026 11/08/2026		TLM1,2	
18.	Difficulty of training deep neural networks	2	13/08/2026 14/08/2026		TLM1,2	
19.	Greedy layer-wise training	2	17/08/2026 18/08/2026		TLM1,2	
20.	Activity -2	1	20/08/2026		TLM 7	
21.	Revision for MID-1	2	21/08/2026 22/08/2026		TLM 3	
No. of classes required to complete UNIT-II: 22				**No. of classes taken:**		
I MID EXAMINATIONS (24-08-2026 TO 29-08-2026)						

UNIT-III: Better Training of Neural Networks

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.	Newer optimization methods for neural networks (Ada grad, ada delta, rms prop, adam, NAG),	4	31/08/2026 01/09/2026 03/09/2026 05/09/2026		TLM1,2	
23.	Second order methods for training	2	07/09/2026 08/09/2026		TLM1,2	
24.	Saddle point problem in neural networks	2	10/09/2026 11/09/2026		TLM1,2	
25.	Regularization methods (dropout, drop connect, batch normalization).	2	12/09/2026 15/09/2026		TLM1,2	
26.	Activity -3	1	17/09/2026		TLM 3/7	
No. of classes required to complete UNIT-III: 11				**No. of classes taken:**		

UNIT-IV: Recurrent Neural Networks & Convolutional Neural Networks

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Back propagation through time	1	18/09/2026		TLM1,2	
28.	Long Short-Term Memory	2	19/09/2026 21/09/2026		TLM1,2	
29.	Gated Recurrent Units	1	22/09/2026		TLM1,2	
30.	Bidirectional LSTMs	2	24/09/2026 25/09/2026		TLM1,2	
31.	Bidirectional RNNs	1	26/09/2026		TLM1,2	
32.	Activity -4	1	28/09/2026		TLM 7	
33.	LeNet, AlexNet	1	29/09/2026		TLM1,2	

34.	Generative models	2	01/10/2026 03/10/2026		TLM1,2	
35.	Restrictive Boltzmann Machines (RBMs)	1	05/10/2026		TLM1,2	
36.	Introduction to MCMC	1	06/10/2026		TLM1,2	
37.	Gibbs Sampling	1	08/10/2026		TLM1,2	
38.	gradient computations in RBMs	2	09/10/2026 10/10/2026		TLM1,2	
39.	Deep Boltzmann Machines	1	12/10/2026		TLM1,2	
No. of classes required to complete UNIT-IV: 17				**No. of classes taken:**		

UNIT-V: Recent trends

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.	Variational Auto encoders	1	13/10/2026		TLM1,2	
41.	Transformers	1	16/10/2026		TLM1,2	
42.	GPT Applications	1	17/10/2026		TLM1,2	
43.	Vision	1	26/10/2026		TLM1,2	
44.	NLP	1	27/10/2026		TLM1,2	
45.	Speech	1	30/10/2026		TLM1,2	
46.	Activity	1	31/10/2026		TLM3/7	
No. of classes required to complete UNIT-V: 07				**No. of classes taken:**		
II MID EXAMINATIONS (02-11-2026 TO 07-11-2026)						

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
1.		2	15/10/2026 29/10/2026		**TLM 3**	

Teaching Learning Methods			
TLM1	Chalk and talk	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM2	PPT	**TLM6**	Group Discussion/Project
TLM3	Tutorial	**TLM7**	Activity Based Learning
TLM4	Demonstration (Lab/Field Visit)		

PART-C

Evaluation PROCESS (R23 Regulation):

Evaluation Task	**Marks**

Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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 engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mrs. M. Gayathri**	**Dr. G. V. Suresh**	**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: B. Usha Rani
Course Name & Code **:** DEVOPS&23IT08
L-T-P Structure **: 3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/VII SEM /B **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Basic Understanding of Software Engineering-SDLC life cycles, knowledge of certain programming languages such as Java and Python.

Course Objectives:

The main objectives of this course are to:
- Describe the agile relationship between development and IT operations.
- Understand the skill sets and high-functioning teams involved in DevOps and related methods to reach a continuous delivery capability.
- Implement automated system update and DevOps lifecycle.

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

CO1	Understand the fundamental concepts of artificial neurons, perceptron's, and learning rules used in basic neural network models. **(Understand – L2)**
CO2	Apply feed-forward neural network architectures and backpropagation algorithms for supervised learning tasks. **(Apply – L3)**
CO3	Analyze various optimization and regularization techniques to improve deep neural network training performance. **(Analyze – L4)**
CO4	Demonstrate the working of RNNs, LSTMs, CNNs, and generative models (RBMs, DBMs) for sequential and visual data**. (Apply – L3)**
CO5	Apply GPT-based models for NLP, vision, and speech applications **(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	2	-	-	-	1	2	-	1	3	1	-
CO2	2	2	3	3	2	-	-	-	1	2	-	1	3	1	-
CO3	2	2	3	3	3	-	-	-	1	2	-	2	3	1	-
CO4	2	2	3	3	3	-	-	-	1	2	-	2	3	2	-
CO5	2	2	3	3	3	-	-	-	1	2	-	3	3	2	-
1 - Low **2 –**Medium **3 -** High															

TEXTBOOKS:

T1	Joyner, Joseph., Devops for Beginners: Devops Software Development Method Guide for Software Developers and It Professionals, 1st Edition Mihails Kono plows, 2015.
T2	Alisson Machado de Menezes., Hands-on DevOps with Linux,1st Edition, BPB Publications, India, 2021.

REFERENCE BOOKS:

R1	Len Bass, Ingo Weber, Liming Zhu. DevOps: A Software Architect's Perspective. Addison Wesley; ISBN-10
R2	Gene Kim Je Humble, Patrick Debois, John Willis. The DevOps Handbook, 1st Edition, IT Revolution Press, 2016.
R3	Verona, Joakim Practical DevOps, 1st Edition, Packt Publishing, 2016.
R4	Joakim Verona. Practical Devops, Ingram short title; 2nd edition (2018). ISBN10: 1788392574
R5	Deepak Gaikwad, Viral Thakkar. DevOps Tools from Practitioner's Viewpoint. Wiley publications. ISBN: 9788126579952

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to DevOps:

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's & PO'S	1	29/06/2026		TLM1, 2	
2.	Introduction to SDLC, Agile Mode	1	30/06/2026		TLM1, 2	
3.	Introduction to DevOps. DevOps Features, DevOps Architecture	2	01/07/2026 02/07/2026		TLM1, 2	
4.	DevOps Lifecycle, Understanding Workflow and principles	2	04/07/2026 06/07/2026		TLM1, 2	
5.	Introduction to DevOps tools, Build Automation, Delivery Automation	2	07/07/2026 08/07/2026		TLM1, 2	
6.	Understanding Code Quality and Automation of CI / CD	2	09/07/2026 11/07/2026		TLM1, 2	
7.	Release management	2	13/07/2026 14/07/2026		TLM1, 2	
8.	Scrum, Kanban, delivery pipeline	3	15/07/2026 16/07/2026 18/07/2026		TLM1, 2	
9.	bottlenecks, examples.	2	20/07/2026 21/07/2026		TLM1, 2	
10.	Activity -1	1	22/07/2026		TLM 7	
No. of classes required to complete UNIT-I: 18				**No. of classes taken:**		

UNIT-II: Source Code Management (GIT):

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.	The need for source code control, the history of source code management	1	23/07/2026 25/07/2025		TLM1,2	
12.	Roles and code, source code management system and migrations	2	27/07/2026 28/07/2026		TLM1,2	
13.	What is Version Control and GIT, GIT Installation	3	29/07/2026 30/07/2026 01/08/2026		TLM1,2	
14.	GIT features, GIT workflow, working with remote repository, GIT commands	2	03/08/2026 04/08/2026		TLM1,2	
15.	GIT branching, GIT staging and collaboration.	3	05/08/2026 06/08/2026 08/08/2026		TLM1,2	
16.	UNIT TESTING - CODE COVERAGE:Inroduction	1	10/08/2026		TLM1,2	
17.	Junit, nUnit & Code Coverage with Sonar Qube	2	11/08/2026 12/08/2026		TLM1,2	
18.	SonarQube - Code Quality Analysis	2	13/08/2026 17/08/2026		TLM1,2	
19.	Practice with Example codes	2	18/08/2026 19/08/2026		TLM1,2	
20.	Activity -2	1	20/08/2026		TLM 7	
21.	Revision for MID-1	1	22/08/2026		TLM 3	
No. of classes required to complete UNIT-II: 20				**No. of classes taken:**		
I MID EXAMINATIONS (24-08-2026 TO 29-08-2026)						

UNIT-III: Build Automation - Continuous Integration (CI):

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.	Build Automation, What is CI Why Cl is Required, CI tools	2	31/08/2026 01/09/2026		TLM1,2	
23.	Introduction to Jenkins (With Architecture), Jenkins workflow	2	02/09/2026 03/09/2026			
24.	Jenkins master slave architecture	2	05/09/2026 07/09/2026		TLM1,2	
25.	Jenkins Pipelines-Types with examples	1	08/09/2026		TLM1,2	

26.	Freestyle Projects & Pipelines creation and explanation	1	09/09/2026		TLM1,2	
27.	Jenkins for Continuous Integration, Create and Manage Builds	2	10/09/2026 12/09/2026			
28.	User Management in Jenkins Schedule Builds	1	15/09/2026			
29.	Launch Builds on Slave Nodes	1	16/09/2026			
30.	Activity -3	1	17/09/2026		TLM 3/7	
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

UNIT-IV: Continuous Delivery (CD):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
31.	Importance of Continuous Delivery, CONTINUOUS DEPLOYMENT- CD Flow	2	19/09/2026 21/09/2026		TLM1,2	
32.	Containerization with Docker: Introduction to Docker, Docker installation	2	22/09/2026 23/09/2026		TLM1,2	
33.	Docker commands, Images & Containers	1	24/09/2026		TLM1,2	
34.	Docker File, running containers	1	26/09/2026		TLM1,2	
35.	working with containers and publish to Docker Hub.	1	28/09/2026		TLM 7	
36.	Testing Tools: Introduction to Selenium	1	29/09/2026		TLM1,2	
37.	Selenium features	2	30/09/2026 01/09/2026		TLM1,2	
38.	JavaScript testing	1	03/10/2026		TLM1,2	
39.	Activity -4	1	05/10/2026		TLM1,2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Configuration Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
40.	ANSIBLE: Introduction to Ansible, Ansible task	1	06/10/2026		TLM1,2	
41.	Roles, Jinja templating	1	07/10/2026		TLM1,2	
42.	Vaults, Deployments using Ansible	2	08/10/2026 10/10/2026		TLM1,2	
43.	Introduction to Kubernetes Namespace & Resources	1	12/10/2026		TLM1,2	
44.	CI/CD - On OCP, BC, DC & ConfigMaps	1	13/10/2026		TLM1,2	
45.	Deploying Apps on OpenShift Container Pods	2	14/10/2026 15/10/2026		TLM1,2	
46.	Introduction to Puppet master and Chef	2	17/10/2026 26/10/2026			
47.	Activity-5	1	27/10/2026		TLM3/7	
No. of classes required to complete UNIT-V: 11				**No. of classes taken:**		
II MID EXAMINATIONS (02-11-2026 TO 07-11-2026)						

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
1.			28/10/2026 29/10/2026		**TLM 3**	

Teaching Learning Methods			
TLM1	Chalk and talk	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM2	PPT	**TLM6**	Group Discussion/Project
TLM3	Tutorial	**TLM7**	Activity Based Learning
TLM4	Demonstration (Lab/Field Visit)		

PART-C

Evaluation PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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 engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs. B. Usha Rani**	**Mrs. B. Usha Rani**	**Dr. Y. Vijay Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : DR.G.V.SURESH
Course Name & Code : Deep Learning & 23AM06
L-T-P Structure : 3-0-0 **Credits:** 03
Program/Sem/Sec : B.Tech./CSE/VII/B **A.Y.:** 2026-27
Pre-requisites: Linear algebra, calculus, probability, Python, Machine Learning, Neural Networks

Course Objectives

The main objective of the course is to make students

The objective of this course is to cover the fundamentals of neural networks as well as some advanced topics such as recurrent neural networks, long short-term memory cells and convolution neural networks.

Course Outcomes: At the end of the course, students will be able to

Understand the fundamental concepts of artificial neurons, perceptrons, and learning rules used in basic neural network models. **(Understand – L2)**

Apply feed-forward neural network architectures and backpropagation algorithms for supervised learning tasks. **(Apply – L3)**

Apply various optimization and regularization techniques to improve deep neural network training performance. **(Apply – L3)**

Demonstrate the working of RNNs, LSTMs, CNNs, and generative models (RBMs, DBMs) for sequential and visual data. **(Apply – L3)**

Apply GPT-based models for NLP, vision, and speech applications **(Apply – 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	PO1 0	PO11	PO1 2	PSO 1	PSO 2	PSO3
CO1	3	2	1	1	1	-	-	-	-	-	2	2	1	2	
CO2	2	3	2	1	2	-	-	-	-	-	2	3	1	2	
CO3	2	3	2	2	2	-	-	-	-	-	3	2	2	2	
CO4	2	3	2	2	3	-	-	-	-	-	2	2	1	3	
CO5	2	2	2	1	3	-	-	-	-	-	2	2	2	3	
1-Low						2 –Medium					3-High				

Textbooks

1. Deep Learning, Ian Goodfellow, Yoshua Bengio, Aaron Courville, MIT Press, 2016.

Reference Books

1. Neural Networks: A Systematic Introduction, Raúl Rojas, 1996
2. Pattern Recognition and Machine Learning, Christopher M. Bishop, 2007

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics

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's & PO'S	1	29-06-2026		TLM 1&2	
2.	Introduction	1	30-06- 2026		TLM 1&2	
3.	Biological Neuron	1	02-07-2026		TLM 1&2	
4.	Idea of computational units	1	03-07-2026		TLM 1&2	
5.	McCulloch–Pitts unit and Thresholding logic	1	06-07-2026		TLM 1&2	
6.	Linear Perceptron	1	07-07-2026		TLM 1&2	
7.	Perceptron Learning Algorithm	1	09-07-2026		TLM 1&2	
8.	Linear separability	1	10-07-2026		TLM 1&2	
9.	Convergence theorem for Perceptron Learning Algorithm	1	13-07-2026			
10.	Activity -1	1	14-07-2026			
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II: Feed Forward Networks

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.	Multilayer Perceptron	2	16-07-2026		TLM 1&2	
12.	Gradient Descent	2	17-07-2026		TLM 1&2	
13.	Backpropagation	1	20-07-2026		TLM 1&2	
14.	Empirical Risk Minimization	1	21-07-2026		TLM 1&2	
15.	Regularization	2	23-07-2026		TLM 1&2	
16.	Autoencoders	1	24-07-2026		TLM 1&2	
17.	Deep Neural Networks	1	27-07-2026		TLM 1&2	
18.	Difficulty of training deep neural networks	2	28-07-2026		TLM 1&2	
19.	Greedy layer-wise training	1	30-07-2026		TLM 1&2	
20.	Activity -2	1	31-07-2026		TLM 1&2	
21.	Revision for MID-1	1	03-07-2026		TLM 1&2	
I MID EXAMINATIONS (24-08-2026 TO 29-08-2026)						
No. of classes required to complete UNIT-II: 15				**No. of classes taken:**		

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.	Newer optimization methods for neural networks (Ada grad, ada delta, rms prop, adam, NAG)	3	04-08-2026 06-08-2026 07-08-2026		TLM 1&2	
23.	Second order methods for training	3	10-08-2026 11-08-2026 13-08-2026		TLM 1&2	
24.	Saddle point problem in neural networks	3	14-08-2026 17-08-2026 18-08-2026		TLM 1&2	
25.	Regularization methods (dropout, drop connect, batch normalization).	3	20-08-2026 21-08-2026 24 -08-2026		TLM 1&2	
26.	Activity -2	1	27-08-2026		TLM 7	
27.	Revision for MID-1	1	28-08-2026		TLM 3	
I MID EXAMINATIONS (24-08-2026 TO 29-08-2026)						
No. of classes required to complete UNIT-II: 14				**No. of classes taken:**		

UNIT-IV: Recurrent Neural Networks

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
28.	Back propagation through time	1	31-08- 2026		TLM 1&2	
29.	Long Short-Term Memory (LSTM)	2	01-09-2026 03-09-2026		TLM 1&2	
30.	Gated Recurrent Units (GRU)	2	07-09-2026 08-09-2026		TLM 1&2	
31.	Bidirectional LSTMs	2	10-09-2026 11-09-2026		TLM 1&2	
32.	Bidirectional RNNs	2	14-09-2026 17-09-2026		TLM 1&2	
33.	Convolutional Neural Networks	2	18-09-2026 21-09-2026		TLM 1&2	
34.	LeNet	2	22-09-2026 24-09-2026		TLM 1&2	
35.	AlexNet	2	25-09-2026 28-09-2026		TLM 1&2	
36.	Generative Models	1	29-09-2026		TLM 1&2	
37.	Restricted Boltzmann Machines (RBMs)	1	01-10-2026		TLM 1&2	
38.	Introduction to MCMC and Gibbs Sampling	1	05-10-2026		TLM 1&2	
39.	Gradient computations in RBMs	1	06-10-2026		TLM 1&2	
40.	Activity -3	1	08-10-2026		TLM 3/7	
No. of classes required to complete UNIT-IV: 20				**No. of classes taken:**		

UNIT-V: Recent Trends

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
41.	Recent Trends	3	09-10-2026 12-10-2026 13-10-2026		TLM 1&2	
42.	Variational Autoencoders	3	15-10-2026 16-10-2026 20-10-2026		TLM 1&2	
43.	Transformers	3	22-10-2026 23-10-2026 26-10-2026		TLM 1&2	
44.	GPT Applications: Vision, NLP, Speech	1	27-10-2026		TLM 1&2	
45.	Activity -4		30-10-2026		TLM 3/7	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

Content Beyond 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.	Osprey optimization technique	2	15/10/2026 29/10/2026		**TLM 3**	

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 (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, 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 teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Design and develop sophisticated software systems, leveraging expertise in data structures, algorithm analysis, web design, and proficiency in machine learning techniques.
PSO 2	Possess the strong data analysis and interpretation skills, enabling them to extract meaningful insights and patterns from large datasets using AI & ML methodologies.
PSO 3	To develop innovative AI and machine learning solutions that strategically leverage data-driven and technical expertise to effectively solve complex, real-world problems.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr. G. V. Suresh**	**Dr. G. V. Suresh**	**Dr. K. Devi Priya**	**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING- SECTION -B

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.M.S.CHAKRAVARTHY
Course Name & Code : HUMAN RESOURCES & PROJECT MANAGEMENT (23HRPM01)
L-T-P Structure : **2-0-0** **Credits:** 2
Program/Sem/Sec : B.Tech/VI SEM /B **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Basic knowledge of management principles and organizational functions.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To explain the fundamentals of Human Resource Management and HR planning.
- To introduce training, development, performance appraisal, and career management.
- To discuss project management concepts, life cycle, and resource allocation.
- To compare project types and their unique management challenges.
- To apply project planning, implementation, control, and evaluation practices.

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

CO	Outcome	Bloom's Level
CO1	Explain fundamentals of HRM and HR planning	L2 – Understand
CO2	State training, development, and performance appraisal techniques	L1 – Remember
CO3	Interpret project management concepts and life cycle stages	L2 – Understand
CO4	Compare project types and their management challenges	L2 – Understand
CO5	Apply project planning, implementation, and evaluation techniques	L3 – Apply

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

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

TEXTBOOKS:

T1	Robert L. Mathis, John H. Jackson, Manas Ranjan Tripathy, *Human Resource Management*, Cengage Learning, 2016.
T2	Sharon Pande & Swapnalekha Basak, *Human Resource Management: Text and Cases*, Vikas Publishing, 2016.
T3	Stewart R. Clegg, Torgeir Skyttermoen, Anne Live Vaagaasar, *Project Management*, Sage Publications, 2021.
T4	K. Nagarajan, *Project Management*, New Age International Publishers, 2017.

REFERENCE BOOKS:

R1	Subba Rao P, *Personnel and Human Resource Management*, Himalaya Publications, 2013.
R2	K. Aswathappa, *Human Resource and Personnel Management*, Tata McGraw Hill, 2013.
R3	Prasanna Chandra, *Projects: Planning, Analysis, Selection, Financing, Implementation and Review*, Tata McGraw Hill, 1998.
R4	Vasanth Desai, *Project Management*, Himalaya Publications, 2018.
R5	Lalitha Balakrishnan & Gowri, *Project Management*, Himalaya Publishing House, 2022.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: HRM Fundamentals

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 HRM, Nature, Scope of HRM	1	29/06/26		TLM1, 2	
2.	Functions of HRM	1	03/07/26		TLM1, 2	
3.	Role of HR Manager, Emerging Trends	1	04/07/26		TLM1, 2	
4.	E-HRM, HR Audit Models	1	06/07/26		TLM1, 2	
5.	HR Planning	1	10/07/26		TLM1, 2	
6.	Demand & Supply Forecasting	1	11/07/26		TLM1, 2	
7.	Job Design	1	13/07/26		TLM1, 2	
8.	Recruitment Sources	1	17/07/26		TLM1, 2	
9.	Selection Procedures	1	18/07/26		TLM1, 2	
10.	Tutorial /Activity / Assignment	2	24/07/26		TLM 3/7	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: HRD & Performance Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	HRD	1	25/07/26		TLM1,2	
12.	HR Accounting Models	1	27/07/26		TLM1,2	
13.	Training & Development Methods	2	31/07/26		TLM1,2	
14.	Performance Appraisal Techniques	1	03/08/26		TLM1,2	
15.	Career Development	1	07/08/26		TLM1,2	
16.	Counseling and Group Interaction	1	08/08/26		TLM1,2	
17.	Tutorial /Activity / Assignment	2	14/08/26		TLM 3/7	
No. of classes required to complete UNIT-II: 9				**No. of classes taken:**		

UNIT-III: Project Management Basics

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Concept of Resource Management	1	17/08/26		TLM1,2	
19.	Project Environment	1	21/08/26		TLM1,2	
20.	Types of Projects	1	22/08/26		TLM1,2	
21.	DPR and Project Networks	1	31/08/26		TLM1,2	
22.	Project Life Cycle,	1	05/09/26		TLM1,2	
23.	Project Proposals, Monitoring Progress	1	07/09/26		TLM1,2	
24.	Project Appraisal & Selection,	1	11/09/26		TLM1,2	
25.	80-20 Rule, Communication Matrix	1	12/09/26		TLM1,2	
26.	Tutorial /Activity / Assignment	2	19/09/26		TLM 3/7	
No. of classes required to complete UNIT-III: 10				**No. of classes taken:**		

UNIT-IV: Project Challenges

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Unique Management Challenges for Different Project Types	3	26/09/26		TLM1,2	
28.	Abandonment Analysis	1	28/09/26		TLM1,2	
29.	Tutorial /Activity / Assignment	1	05/10/26		TLM 3/7	
No. of classes required to complete UNIT-IV: 7				**No. of classes taken:**		

UNIT-V: Project Implementation & Review

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.	Forms of Project Organization	01	09/10/26			
31.	Project Planning & Control	01	10/10/26			
32.	Human Aspects of Project Management	01	12/10/26			
33.	Prerequisites for Successful Implementation	01	16/10/26			
34.	Project Review	1	17/10/26			
35.	Performance Evaluation, Abandonment Analysis	1	30/10/26			
36.	Tutorial / Activity / Assignment	1	31/10/26		TLM3/7	
No. of classes required to complete UNIT-V: 13				**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
1.	revision	50	31-10-2026		**TLM 3**	

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 (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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	Apply knowledge of management and HRM principles.
PO 2	Analyse organizational and project challenges.
PO 3	Design HR and project solutions with ethical considerations.
PO 4	Conduct investigations and appraisals of HR & project practices.
PO 5	Use modern HRM and project management tools.
PO 6	Apply ethical principles and commit to professional ethics, responsibilities, and norms in HRM and project practices.
PO 7	Understand the impact of HR and project management solutions in societal and environmental contexts, and demonstrate the need for sustainable development.
PO 8	Function effectively as an individual, and as a member or leader in diverse teams and multidisciplinary settings..
PO 9	Communicate effectively on HRM and project activities with the academic, professional, and societal community through reports, presentations, and clear instructions.
PO 10	Demonstrate knowledge and understanding of management and financial principles, and apply these to manage projects and organizational resources.
PO 11	Recognize the need for lifelong learning and develop the ability to engage in continuous professional development in HRM and project management.
PO 12	Integrate global perspectives, adaptability, and innovation in HRM and project practices to meet evolving organizational needs.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Apply HRM practices in organizational contexts.
PSO 2	Design and manage projects effectively across industries.
PSO 3	Design and manage projects effectively across industries.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**M.S.CHAKRAVARTHY**			**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: B. Usha Rani
Course Name & Code **:** DEVOPS&23IT08
L-T-P Structure **: 3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/VII SEM /B **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Basic Understanding of Software Engineering-SDLC life cycles, knowledge of certain programming languages such as Java and Python.

Course Objectives:

The main objectives of this course are to:
- Describe the agile relationship between development and IT operations.
- Understand the skill sets and high-functioning teams involved in DevOps and related methods to reach a continuous delivery capability.
- Implement automated system update and DevOps lifecycle.

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

CO1	Understand the fundamental concepts of artificial neurons, perceptron's, and learning rules used in basic neural network models. **(Understand – L2)**
CO2	Apply feed-forward neural network architectures and backpropagation algorithms for supervised learning tasks. **(Apply – L3)**
CO3	Analyze various optimization and regularization techniques to improve deep neural network training performance. **(Analyze – L4)**
CO4	Demonstrate the working of RNNs, LSTMs, CNNs, and generative models (RBMs, DBMs) for sequential and visual data**. (Apply – L3)**
CO5	Apply GPT-based models for NLP, vision, and speech applications **(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	2	-	-	-	1	2	-	1	3	1	-
CO2	2	2	3	3	2	-	-	-	1	2	-	1	3	1	-
CO3	2	2	3	3	3	-	-	-	1	2	-	2	3	1	-
CO4	2	2	3	3	3	-	-	-	1	2	-	2	3	2	-
CO5	2	2	3	3	3	-	-	-	1	2	-	3	3	2	-
1 - Low **2 –**Medium **3 -** High															

TEXTBOOKS:

T1	Joyner, Joseph., Devops for Beginners: Devops Software Development Method Guide for Software Developers and It Professionals, 1st Edition Mihails Kono plows, 2015.
T2	Alisson Machado de Menezes., Hands-on DevOps with Linux,1st Edition, BPB Publications, India, 2021.

REFERENCE BOOKS:

R1	Len Bass, Ingo Weber, Liming Zhu. DevOps: A Software Architect's Perspective. Addison Wesley; ISBN-10
R2	Gene Kim Je Humble, Patrick Debois, John Willis. The DevOps Handbook, 1st Edition, IT Revolution Press, 2016.
R3	Verona, Joakim Practical DevOps, 1st Edition, Packt Publishing, 2016.
R4	Joakim Verona. Practical Devops, Ingram short title; 2nd edition (2018). ISBN10: 1788392574
R5	Deepak Gaikwad, Viral Thakkar. DevOps Tools from Practitioner's Viewpoint. Wiley publications. ISBN: 9788126579952

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to DevOps:

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's & PO'S	1	29/06/2026		TLM1, 2	
2.	Introduction to SDLC, Agile Mode	1	30/06/2026		TLM1, 2	
3.	Introduction to DevOps. DevOps Features, DevOps Architecture	2	01/07/2026 03/07/2026		TLM1, 2	
4.	DevOps Lifecycle, Understanding Workflow and principles	2	04/07/2026 06/07/2026		TLM1, 2	
5.	Introduction to DevOps tools, Build Automation, Delivery Automation	2	07/07/2026 08/07/2026		TLM1, 2	
6.	Understanding Code Quality and Automation of CI / CD	2	10/07/2026 11/07/2026		TLM1, 2	
7.	Release management	2	13/07/2026 14/07/2026		TLM1, 2	
8.	Scrum, Kanban, delivery pipeline	3	15/07/2026 17/07/2026 18/07/2026		TLM1, 2	
9.	bottlenecks, examples.	2	20/07/2026 21/07/2026		TLM1, 2	
10.	Activity -1	1	22/07/2026		TLM 7	
No. of classes required to complete UNIT-I: 18				**No. of classes taken:**		

UNIT-II: Source Code Management (GIT):

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.	The need for source code control, the history of source code management	1	24/07/2026 25/07/2025		TLM1,2	
12.	Roles and code, source code management system and migrations	2	27/07/2026 28/07/2026		TLM1,2	
13.	What is Version Control and GIT, GIT Installation	3	29/07/2026 31/07/2026 01/08/2026		TLM1,2	
14.	GIT features, GIT workflow, working with remote repository, GIT commands	2	03/08/2026 04/08/2026		TLM1,2	
15.	GIT branching, GIT staging and collaboration.	3	05/08/2026 07/08/2026 08/08/2026		TLM1,2	
16.	UNIT TESTING - CODE COVERAGE:Inroduction	1	10/08/2026		TLM1,2	
17.	Junit, nUnit & Code Coverage with Sonar Qube	2	11/08/2026 12/08/2026		TLM1,2	
18.	SonarQube - Code Quality Analysis	2	14/08/2026 17/08/2026		TLM1,2	
19.	Practice with Example codes	2	18/08/2026 19/08/2026		TLM1,2	
20.	Activity -2	1	21/08/2026		TLM 7	
21.	Revision for MID-1	1	22/08/2026		TLM 3	
No. of classes required to complete UNIT-II: 20				**No. of classes taken:**		
I MID EXAMINATIONS (24-08-2026 TO 29-08-2026)						

UNIT-III: Build Automation - Continuous Integration (CI):

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.	Build Automation, What is CI Why Cl is Required, CI tools	1	31/08/2026		TLM1,2	
23.	Introduction to Jenkins (With Architecture), Jenkins workflow	2	01/09/2026 02/09/2026			
24.	Jenkins master slave architecture	2	05/09/2026 07/09/2026		TLM1,2	
25.	Jenkins Pipelines-Types with examples	1	08/09/2026		TLM1,2	

26.	Freestyle Projects & Pipelines creation and explanation	1	09/09/2026		TLM1,2	
27.	Jenkins for Continuous Integration, Create and Manage Builds	2	11/09/2026 12/09/2026			
28.	User Management in Jenkins Schedule Builds	1	15/09/2026			
29.	Launch Builds on Slave Nodes	1	16/09/2026			
30.	Activity -3	1	18/09/2026		TLM 3/7	
No. of classes required to complete UNIT-III: 12				**No. of classes taken:**		

UNIT-IV: Continuous Delivery (CD):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
31.	Importance of Continuous Delivery, CONTINUOUS DEPLOYMENT- CD Flow	2	19/09/2026 21/09/2026		TLM1,2	
32.	Containerization with Docker: Introduction to Docker, Docker installation	2	22/09/2026 23/09/2026		TLM1,2	
33.	Docker commands, Images & Containers	1	25/09/2026		TLM1,2	
34.	Docker File, running containers	1	26/09/2026		TLM1,2	
35.	working with containers and publish to Docker Hub.	1	28/09/2026		TLM 7	
36.	Testing Tools: Introduction to Selenium	1	29/09/2026		TLM1,2	
37.	Selenium features	1	30/09/2026		TLM1,2	
38.	JavaScript testing	1	03/10/2026		TLM1,2	
39.	Activity -4	1	05/10/2026		TLM1,2	
No. of classes required to complete UNIT-IV: 11				**No. of classes taken:**		

UNIT-V: Configuration Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
40.	ANSIBLE: Introduction to Ansible, Ansible task	1	06/10/2026		TLM1,2	
41.	Roles, Jinja templating	1	07/10/2026		TLM1,2	
42.	Vaults, Deployments using Ansible	2	09/10/2026 10/10/2026		TLM1,2	
43.	Introduction to Kubernetes Namespace & Resources	1	12/10/2026		TLM1,2	
44.	CI/CD - On OCP, BC, DC & ConfigMaps	1	13/10/2026		TLM1,2	
45.	Deploying Apps on OpenShift Container Pods	2	14/10/2026 16/10/2026		TLM1,2	
46.	Introduction to Puppet master and Chef	2	17/10/2026 26/10/2026			
47.	Activity-5	1	27/10/2026		TLM3/7	
No. of classes required to complete UNIT-V: 11				**No. of classes taken:**		
II MID EXAMINATIONS (02-11-2026 TO 07-11-2026)						

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
1.			28/10/2026 30/10/2026		**TLM 3**	

Teaching Learning Methods			
TLM1	Chalk and talk	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM2	PPT	**TLM6**	Group Discussion/Project
TLM3	Tutorial	**TLM7**	Activity Based Learning
TLM4	Demonstration (Lab/Field Visit)		

PART-C

Evaluation PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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 engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs. B. Usha Rani**	**Mrs. B. Usha Rani**	**Dr. Y. Vijay Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms.M.Swathi
Course Name & Code : GENERATIVE AI & 23IT10
L-T-P Structure : 4-1-0 **Credits:** 3
Program/Sem/Sec : B.Tech VII Sem CSE – B Section **A.Y.:** 2026-27

PREREQUISITE: Machine Learning Fundamentals, Deep Learning Basics

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of this course is

- Understand the basics of Generative AI.
- Know the basics of Text Generation.
- Understand the process of generating videos.
- Know about GAN and its variants.

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

CO1	Describe the fundamental concepts, types of generative models (GANs, VAEs), and the ethical challenges associated with Generative AI. **(Understand-L2)**
CO2	Explain the architecture of Large Language Models (BERT, GPT), the mechanics of Transformers, and the principles of Prompt Engineering. **(Understand-L2)**
CO3	Summarize the working principles of image generation techniques including GANs, Variational Auto encoders, and Stable Diffusion models. **(Understand-L2)**
CO4	Recognize the applications of generative models in creative domains such as painting, music, and style transfer, including the role of autonomous agents. **(Remember - L1)**
CO5	Identify open-source models, programming frameworks (Lang Chain, Hugging Face), and strategies for training, fine-tuning, and deploying generative models. **(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	3	1				3	2	3				1	1	2	-
CO2	3	1	1	1						1		1	1	2	-
CO3	3	1	1	1									1	2	-
CO4	2					3			1				1	2	-
CO5	2								1		2	1	2	2	-
1 - Low						**2** –Medium						**3** – High			

Text Books:

T1. Denis Rothman, for Natural Language Processing and Computer Third Edition ,Packt Books, 2024

Reference Books:

R1. David Foster, Deep Books, 2024.

R2. Altaf Rehmani, AI for BlueRose One, 2024.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Generative AI

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	CEOs and COs Discussion, Introduction to Generative AI	1	29-06-2026		TLM1 & TLM2	
2	Historical Overview of Generative Modeling, Importance of Generative AI	1	30-06-2026		TLM1 & TLM2	
3	Generative Modeling vs Discriminative Modeling	1	01-07-2026		TLM1 & TLM2	
4	Types of Generative Models – Overview	1	03-07-2026		TLM1 & TLM2	
5	Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs)	1	04-07-2026		TLM1 & TLM2	
6	Tutorial	1	06-07-2026			
7	Autoregressive Models and Vector Quantized Diffusion Models	1	07-07-2026		TLM1 & TLM2	
8	Probabilistic Modeling and Generative Process	1	09-07-2026		TLM1 & TLM2	
9	Challenges of Generative Modeling	1	10-07-2026		TLM1 & TLM2	
10	Tutorial/Activity	1	11-07-2026		TLM3	
11	Ethical Aspects of AI and Responsible AI	1	13-07-2026		TLM1 & TLM2	
12	Future of Generative AI, Use Cases, Unit-I Revision	1	14-07-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Generative Models for Text

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13	Language Model Basics and Building Blocks of Language Models	1	16-07-2026		TLM1 & TLM2	
14	Transformer Architecture Overview	1	17-07-2026		TLM1 & TLM2	
15	Tutorial	1	18-07-2026		TLM3	
16	Encoder and Decoder Architecture	1	20-07-2026		TLM1 & TLM2	
17	Attention Mechanisms in Transformers	1	21-07-2026		TLM1 & TLM2	
18	Generation of Text using Language Models	1	23-07-2026		TLM1 & TLM2	
19	BERT Model Architecture	1	24-07-2026		TLM1 & TLM2	
20	Tutorial	1	25-07-2026		TLM3	
21	GPT Models Architecture	1	27-07-2026		TLM1 & TLM2	
22	Autoencoding and Regression Models	1	28-07-2026		TLM2 & TLM4	

23	Exploring ChatGPT Applications	1	30-07-2026		TLM1 & TLM2	
24	Prompt Engineering – Designing Effective Prompts	1	31-07-2026		TLM1 & TLM2	
25	Tutorial/Activity	1	01-08-2026		TLM3 & TLM 7	
26	RLHF and Retrieval Augmented Generation (RAG)	1	03-08-2026		TLM1 & TLM2	
27	Multimodal LLMs, Hallucination Issues, Unit-II Revision	1	04-08-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-II: 15				**No. of classes taken:**		

I MID EXAMINATIONS 24-08-2026 TO 29-08-2026

UNIT-III: Generation of Images

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
28	Introduction to GANs	1	06-08-2026		TLM1 & TLM2	
29	Tutorial	1	07-08-2026		TLM3	
30	Adversarial Training Process and Nash Equilibrium	1	10-08-2026		TLM1 & TLM2	
31	Variational Autoencoders (VAEs)	1	11-08-2026		TLM1 & TLM2	
32	Encoder–Decoder Architectures	1	13-08-2026		TLM1 & TLM2	
33	Tutorial	1	14-08-2026		TLM3	
34	Stable Diffusion Models	1	17-08-2026		TLM1 & TLM2	
35	Transformer-Based Image Generation	1	18-08-2026		TLM1 & TLM2	
36	CLIP Model and Vision Transformers (ViT)	1	20-08-2026		TLM2 & TLM4	
37	DALL-E2 and DALL-E3	1	21-08-2026		TLM1 & TLM2	
38	Tutorial/Activity	1	22-08-2026		TLM3 & TLM 7	
39	GPT-4V Applications	1	31-08-2026		TLM1 & TLM2	
40	Mode Collapse and Stability Issues	1	01-09-2026		TLM1 & TLM2	
41	Unit-III Revision	1	03-09-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-III: 14				**No. of classes taken:**		

UNIT-IV: Generation of Painting, Music and Play

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42	Variants of GANs and Types of GANs	1	05-09-2026		TLM1 & TLM2	
43	Tutorial	1	07-09-2026		TLM3	
44	CycleGAN Architecture	1	08-09-2026		TLM1 & TLM2	
45	Using CycleGAN to Generate Paintings	1	10-09-2026		TLM2 & TLM4	
46	Neural Style Transfer	1	11-09-2026		TLM1 & TLM2	
47	Style Transfer Applications	1	15-09-2026		TLM2 & TLM4	

48	Music Generating RNN	1	17-09-2026		TLM1 & TLM2	
49	MuseGAN	1	18-09-2026		TLM1 & TLM2	
50	Autonomous Agents	1	19-09-2026		TLM1 & TLM2	
51	Tutorial/Activity	1	21-09-2026		TLM3 & TLM 7	
52	Deep Q Algorithm and Actor-Critic Network	1	22-09-2026		TLM1 & TLM2	
53	Unit-IV Revision	1	24-09-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Open Source Models and Programming Frameworks

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
54	Training and Fine-Tuning of Generative Models	1	24-09-2026		TLM1 & TLM2	
55	GPT4All, Transfer Learning and Pretrained Models	2	25-09-2026 & 26-09-2026		TLM1 & TLM2	
56	Tutorial	1	28-09-2026		TLM3	
57	Training Vision Models and Google Copilot	1	29-09-2026		TLM1 & TLM2	
58	Programming Large Language Models	1	01-10-2026		TLM2 & TLM4	
59	LangChain Framework	1	03-10-2026		TLM2 & TLM4	
60	Open Source Models – LLaMA	2	05-10-2026 & 06-10-2026		TLM1 & TLM2	
61	Tutorial/Activity	1	08-10-2026		TLM3 & TLM 7	
62	Programming for TimeSformer	1	09-10-2026		TLM1 & TLM2	
63	Deployment of Generative Models	1	12-10-2026		TLM1 & TLM2	
64	Hugging Face Platform	1	13-10-2026		TLM2 & TLM4	
65	Unit-V Revision	1	15-10-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-V: 14				**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
TLM7	Activity		

Content Beyond Syllabus

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes (COs)	Text Book Followed	HOD Sign
1	Agentic AI and Multi-Agent Systems	1	16-10-2026		TLM2, TLM4 & TLM6	CO4, CO5	R1	
2	Retrieval Augmented Generation (RAG) using LangChain Applications	1	17-10-2026		TLM2 & TLM4	CO2, CO5	R1	
3	Fine-Tuning Open Source LLMs using LoRA and PEFT	1	26-10-2026		TLM2 & TLM4	CO5	R1	
4	AI Coding Assistants (GitHub Copilot, Cursor AI, Code Generation Tools)	1	27-10-2026		TLM2, TLM4 & TLM6	CO5	R2	
5	Recent Trends in Generative AI (GPT-4o, Multimodal AI, AI Agents)	1	29-10-2026		TLM2 & TLM5	CO1, CO5	R2	
No. of Classes		5			No. of classes taken:			

Use Cases

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes (COs)	HOD Sign
1	Text Content Generation	1	30-10-2026		Hands-on	CO4, CO5	
2	Image and Multimedia Generation	1	31-10-2026		Hands-on	CO4, CO5	

II MID EXAMINATIONS 02-11-2026 TO 07-11-2026

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
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.M.Swathi**	**Mr. D. Anil Kumar**	**Dr. K Devi Priya**	**Dr. S. Nagarjuna Reddy**
Signature				

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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. B. Pangedaiah
Course Name & Code : Utilization of Electrical Energy & 23EE83
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech, CSE-B., VII-Sem. A.Y : 2026-27

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. **(Understand-L2)**
CO 2	Analyze performance of various lighting schemes. **(Understand-L2)**
CO 3	Analyze the performance of electric drive systems. **(Understand-L2)**
CO 4	Understand the different schemes of traction and its main components **(Understand-L2)**
CO5	Understand various tariff methods and power factor improvement techniques. **(Understand-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 1	PSO 2	PSO 3
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. V K Mehta & Rohit Mehta, "Principles of Power System", Revised Edition, S.Chand Publications, 2022.

R2. A.Chakrabarthi, M.L.Soni, P.V.Gupta and U.S.Bhatnagar, "A Textbook on Power system Engineering", Dhanpat Rai Publishing Company (P) Ltd., 2008.

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	30-06-2026		TLM1 &TLM2	
2.	Advantages: Electric heating	1	01-07-2026		TLM1 &TLM2	
3.	methods of electric heating	1	03-07-2026		TLM1 &TLM2	
4.	Resistance heating	1	04-07-2026		TLM1 &TLM2	
5.	Induction heating	1	07-07-2026		TLM1 &TLM2	
6.	dielectric heating	1	08-07-2026		TLM1 &TLM2	
7.	ARC Furnace-Direct furnaces	1	10-07-2026		TLM1 &TLM2	
8.	ARC Furnace-indirect arc furnaces	1	11-07-2026		TLM1 &TLM2	
9.	Electric Welding: Resistance welding	1	14-07-2026		TLM1 &TLM2	
10.	Arc welding	1	15-07-2026		TLM1 &TLM2	
11.	Electric welding equipment	1	17-07-2026		TLM1 &TLM2	
12.	Comparison between AC and DC welding	1	18-07-2026		TLM1 &TLM2	
No. of classes required to complete UNIT-I: 12					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
13.	Introduction	1	21-07-2026		TLM1/TLM2	
14.	Nature of light	1	22-07-2026		TLM1/TLM2	
15.	Laws of illumination	1	24-07-2026		TLM1/TLM2	
16.	Laws of illumination	1	25-07-2026		TLM1/TLM2	
17.	Lighting schemes, sources of light	1	28-07-2026		TLM1/TLM2	
18.	Fluorescent Lamp, CFL and LED	1	29-07-2026		TLM1/TLM2	
19.	Sodium Vapor Lamp	1	31-07-2026		TLM1/TLM2	
20.	Neon lamps	1	01-08-2026		TLM1/TLM2	

21.	mercury vapor lamps	1	04-08-2026		TLM1/TLM2	
22.	Comparison between tungsten &fluorescent tubes	1	05-08-2026		TLM1/TLM2	
23.	Requirements of good lighting	1	07-08-2026		TLM1/TLM2	
24.	Street lighting	1	08-08-2026		TLM1/TLM2	
25.	Assignment/Quiz	2	11-08-2026, 12-08-2026		TLM3	
No. of classes required to complete UNIT-II: 14					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
26.	Introduction	1	01-09-2026		TLM1 &TLM2	
27.	Factors affecting selection of motor	1	02-09-2026		TLM1 &TLM2	
28.	Types of loads	1	05-09-2026		TLM1 &TLM2	
29.	Transient Characteristics of drives	1	08-09-2026		TLM1 &TLM2	
30.	Steady state characteristics of drives	1	09-09-2026		TLM1 &TLM2	
31.	Steady state characteristics of drives	1	11-09-2026		TLM1 &TLM2	
32.	Size of motor	1	12-09-2026		TLM1 &TLM2	
33.	Load Equalization	1	15-09-2026		TLM1 &TLM2	
34.	Industrial applications of drives	1	16-09-2026		TLM1 &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
35.	Introduction	1	18-09-2026		TLM1	
36.	Requirement of an ideal traction system	1	19-09-2026		TLM1	
37.	System for electric traction	1	22-09-2026		TLM1	
38.	Track electrification–the traction motor– train movement	1	23-09-2026		TLM1	
39.	Track electrification–the traction motor– train movement	1	25-09-2026		TLM1	
40.	Speed time curves for different services	1	26-09-2026		TLM1	

41.	Trapezoidal and quadrilateral speed time curves	1	29-09-2026		TLM1	
42.	Trapezoidal and quadrilateral speed time curves	1	30-09-2026		TLM1	
43.	Problems on train movement	1	03-10-2026		TLM1	
No. of classes required to complete UNIT-IV: 10					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
44.	Desirable characteristics	1	06-10-2026		TLM1 &TLM2	
45.	Types of Tariff	1	07-10-2026		TLM1 &TLM2	
46.	Flat rate	1	09-10-2026		TLM1 &TLM2	
47.	Block-rate	1	10-10-2026		TLM1 &TLM2	
48.	KVA maximum demand	1	13-10-2026		TLM1 &TLM2	
49.	Time of Day tariff	1	14-10-2026		TLM1 &TLM2	
50.	Disadvantages of low power factor	1	16-10-2026		TLM1 &TLM2	
51.	Advantages of improved p.f	1	17-10-2026		TLM1 &TLM2	
52.	Improvement devices	1	27-10-2026		TLM1 &TLM2	
53.	Power factor improvement using static capacitor	1	28-10-2026		TLM1 &TLM2	
54.	Most economical power factor	1	28-10-2026		TLM1 &TLM2	
55.	Location of power factor improvement devices from consumer	1	30-10-2026		TLM1 &TLM2	
No. of classes required to complete UNIT-V: 13					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
56.	Economic aspects in utilization of electrical energy	1	30-10-2026		TLM1/ TLM2	

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)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1.	Pursue a successful career in the area of Information Technology or its allied fields..
PEO2.	Exhibit sound knowledge in the fundamentals of Information Technology and apply practical experience with programming techniques to solve real world problems.
PEO3.	Able to demonstrate self-learning, life-long learning and work in teams on multidisciplinary projects.
PEO4.	Able to understand the professional code of ethics and demonstrate ethical behaviour, effective communication, team work and leadership skills in their job.

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):

PSO1	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical po
PSO2	Design and analyze electrical machines, modern drive and lighting systems.
PSO3	Specify, design, implement and test analog and embedded signal processing electronic systems.
PSO4	Design controllers for electrical and electronic systems to improve their performance.

Dr. B. Pangedaiah	Dr. B. Pangedaiah	Dr.M.S.Giridhar	Dr. P. Sobharani
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. SUNILKUMAR KETINENI
Course Name & Code : **PROMPT ENGINEERIN (23AMS1)**
L-T-P Structure : **1-0-3** **Credits:** 2
Program/Sem/Sec : B.Tech/CSE/VII/B **A.Y.:** 2026-27

PREREQUISITE: Basics of Computer Knowledge

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objectives of the course are to

- Apply iterative prompting for clarity and context.
- Create varied prompts to steer model outputs.
- Construct chain-of-thought and structured prompts.
- Develop retrieval-augmented pipelines to ground outputs.
- Evaluate LLM agents and multimodal apps for ethics and robustness.

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

CO1: Understand the fundamental principles, techniques, and design patterns of effective prompt engineering. **(Understand-L2)**
CO2: Apply prompt engineering techniques (e.g., zero-shot, few-shot, chain-of-thought) to enhance model performance. **(Apply-L3)**
CO3: Utilize Large Language Models (LLMs) to generate text, images, and code for creative and practical applications. **(Apply-L3)**
CO4: Evaluate LLM outputs using metrics like accuracy and relevance and refine prompts to minimize hallucinations and bias. **(Evaluate-L5)**
CO5: Implement ethical, safe, and secure prompting strategies to comply with data privacy and legal standards. **(Apply-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	2	–	–	2	–	–	–	–	–	–	2	2	1	–
CO2	2	3	2	1	3	–	–	–	–	–	–	2	3	2	1
CO3	2	2	3	2	3	–	–	–	1	2	–	2	3	3	2
CO4	2	3	2	3	2	–	–	2	–	1	–	2	2	2	1
CO5	–	–	1	–	2	3	2	3	–	1	–	2	2	2	–

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

PART-B:

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	**Environment & Connectivity:** Install required packages (e.g., transformers, OpenAI); securely configure the API key; run a simple "Hello, world" prompt to verify model access.	01	30/6/26		
2.	**Foundations of Prompt Engineering:** Introduction to prompt engineering, definition, distinction between prompt engineering and model fine-tuning, motivation, benefits, and anatomy of a prompt.	03	1/7/26		
3.	**Baseline vs. Enhanced Prompts:** Execute a naïve prompt ("Write a one-paragraph bio of Ada Lovelace.") and an enhanced prompt that adds role framing, specificity, and explicit format instructions; compare both outputs for relevance, completeness, and style.	01	7/7/26		
4.	**Python Environment & LLM Connectivity:** Install required Python packages, configure API keys securely, connect to an LLM, and execute a simple "Hello, World" prompt.	03	8/7/26		
5.	**Effective Prompt Design:** Core principles of effective prompt design, iterative prompting lifecycle, common prompt pitfalls, and prompt remediation techniques.	01	14/7/26		
6.	**Iterative Refinement on a Simple Task:** Summarize the plot of the Shakespearean play Romeo and Juliet in two sentences through three rounds of prompt tweaking: a. Minimal instruction. b. Addition of length and style constraints. c. Specification of key content elements (setting and theme). Document how each iteration changes and improves the result.	03	15/7/26		
7.	**Diagnosing Prompt Failures & Edge Cases:** Craft a vague or contradictory prompt; analyze the failure mode (ambiguity, missing context, or format errors); refine the prompt by adding examples or clarifying instructions.	01	21/7/26		
8.	**Advanced Prompt Patterns**: Enhanced prompt anatomy, contextual details, explicit output specifications, prompt structuring, template design, and few-shot in-context prompting.	03	22/7/26		
9.	**Role-Based & Constraint Prompting:** Role-based prompting, negative prompting, constraint specification, instruction enforcement, and iterative prompt refinement.	01	28/7/26		
10.	**Few-Shot vs. Zero-Shot Comparison:** Design and execute a zero-shot prompt and a few-shot prompt (with	03	29/7/26		

	2–3 exemplar input-output pairs) for a chosen text task (e.g., sentiment classification or translation); compare outputs for accuracy, consistency, and adherence to examples.				
11.	**Structured Output & Reasoning:** Prompting for structured outputs including lists, Markdown tables, JSON, YAML, chain-of-thought prompting, and task decomposition.	01	4/8/26		
12.	**Role-Based & Negative Prompting:** Craft a role-based prompt to establish a specific persona (e.g., "You are a financial advisor…"); then create a negative prompt to suppress undesired content (e.g., "Do not mention any brand names"); evaluate how each influences the model's response.	03	5/8/26		
13.	**Introduction to Retrieval-Augmented Generation (RAG):** Limitations of LLM knowledge, need for external data sources, RAG architecture, indexing, retrieval, and generation.	01	11/8/26		
14.	**Constraint Specification & Iterative Refinement:** Select an open-ended task (e.g., summarizing a technical article); issue a basic prompt; identify failures in length or format; refine the prompt by adding explicit constraints (word count, bullet format, etc.); document improvements over two refinement cycles.	03	12/8/26		
15.	**LangChain & LCEL Fundamentals:** Introduction to LangChain, LangChain Expression Language (LCEL), document loading, text splitting, embeddings, and vector stores.	01	18/8/26		
16.	**Structured Format Prompting:** Instruct the model to output information as bullet lists and Markdown tables (e.g., "List three benefits of daily exercise in a Markdown table with columns 'Benefit' and 'Description.'"); verify the output matches the requested structure.	03	19/8/26		
17.	**JSON/YAML Generation:** Provide a brief dataset description (e.g., three books with title, author, publication year) and prompt the model to produce valid JSON or YAML; use a parser to validate syntax and refine the prompt if errors occur.	01	1/9/26		
18.	**Building a Basic RAG Pipeline:** Construct a simple retrieval-generation workflow, retrieve relevant document chunks, generate responses, and compare results with direct prompting.	01	2/9/26		
19.	**Chain-of-Thought & Task Decomposition:** Present a multi-step problem (e.g., a logic puzzle) and apply zero-shot CoT prompting (e.g., "Let's think step by step. Explain your reasoning before the final answer."); separately, decompose the problem into sequential sub-questions, collect partial answers, combine them, and compare accuracy against a direct-answer baseline.	03	8/9/26		

20.	**Introduction to LLM Agents:** Basic architecture of LLM agents, tool/function calling, and implementing a simple calculator agent.	01	9/9/26		
21.	**Building a Simple LCEL Chain:** Create a minimal LCEL script that accepts a fixed instruction (e.g., "Summarize this text: …"), passes it to an LLM, and prints the result; verify end-to-end execution.	03	15/9/26		
22.	**Multimodal AI:** Overview of multimodal AI models (VLMs), text-to-image prompting, image understanding, and prompt engineering for multimodal applications.	01	16/9/26		
23.	**Basic Data Indexing for RAG:** Load a small collection of documents; split them into uniform chunks (e.g., 200 tokens); generate embeddings for each chunk; store them in an in-memory vector store; inspect for consistency **Constructing & Running a Basic RAG Chain:** Build a pipeline that: a. Receives a user query. b. Retrieves the top-k relevant chunks. c. Constructs a combined prompt with context + query. d. Sends it to the LLM. e. Returns the answer. Test with sample queries and compare factual accuracy against a prompt without retrieval.	03	22/9/26		
24.	**Prompt Evaluation Techniques:** Manual evaluation methods, heuristic checks for accuracy, relevance, format compliance, and introduction to LLM-as-Judge.	01	23/9/26		
25.	**Prompt Security & Safety:** Prompt injection attacks, sensitive information risks, prompt-based mitigation strategies, and robustness techniques. **Ethics in Prompt Engineering:** Bias, misinformation, data privacy, responsible AI practices, and ethical considerations in prompt engineering.	01	29/9/26		
26.	**Building a Simple LLM Agent:** Register a tool (e.g., a calculator function) and craft prompts that instruct the agent to invoke it when required; implement using LangChain or a function-calling API; test on queries requiring tool execution. **Multimodal Prompting Exploration:** Generate images from detailed text prompts; feed one generated image into an image-understanding model or API with an appropriate prompt; compare the returned caption to the original prompt to evaluate alignment.	03	30/9/26		
27.	**Prompt Evaluation & Ethics Workshop:** a. Select two existing prompts and generate multiple outputs; apply manual heuristic checks for accuracy, relevance, and format compliance.	01	6/10/26		

	b. Use an "LLM-as-Judge" prompt (e.g., "Rate these outputs on a scale of 1–5 for clarity and correctness.") to automate evaluation. c. Design a prompt-injection test (e.g., "Ignore previous instructions…"), observe the response, then refine system prompts to mitigate the vulnerability.				
28.	**Prompt-Driven Application Development:** Introduction to Streamlit and Gradio for building and deploying prompt-driven AI applications.	03	7/10/26		
29.	**Course Review & Integrated Hands-on Exercise:** Review of all concepts, integrated prompt engineering exercise combining prompting, RAG, agents, structured outputs, evaluation, and discussion on continuous learning in prompt engineering.	01	13/10/26		
30.	Internal Exam	03	28/10/26		

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Day to Day Work:	15
Internal Test	15
Continuous Internal Assessment	30
Procedure	20
Execution & Results	30
Viva-voce	20
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
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. Sunilkumar Ketineni**	**Dr.K.V.Pandu Rangarao**	**Dr. K. Devi Priya**	**Dr. S. Nagarjuna Reddy**
Signature				

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Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: DR**. J.NAGESWARA RAO**

Course Name & Code : Constitution of India(23MC05)
L-T-P Structure **: 2-0-0**
Credits: 3
Program/Sem/Sec : B.Tech/CSE/VII/B **A.Y:** 2026-27

PREREQUISITE: -NIL

Course Objectives:
The main objectives of the course are to
1. To make students understand the historical background and philosophy of the Indian Constitution.
2. To make students acquire knowledge of Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties.
3. To make students understand the structure, powers, and functions of the Legislature, Executive, and Judiciary.
4. To make students analyze the role and functioning of local self-government institutions and grassroots democracy.
5. To make students understand the role of the Election Commission and constitutional bodies for the welfare of marginalized sections.

Course Outcomes:
Upon successful completion of this course, the student should be able to
CO1: Explain the history, philosophy, and salient features of the Indian Constitution. **(UnderstandL2)**
CO2: Describe Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties. **(Understand-L2)**
CO3: List the powers and functions of the Legislature, Executive, and Judiciary. **(Remember-L1)**
CO4: Interpret the structure and functioning of local administration and Panchayati Raj institutions**. (Understand-L2)**
CO5: Explain the role of the Election Commission and welfare institutions for SC/ST/OBC and women. **(Understand-L2)**

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

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	-	-	-	3	-	2	-	1	-	2
CO2	1	2	-	-	-	3	-	3	-	1	-	2
CO3	2	2	-	-	-	3	-	2	1	1	-	2
CO4	1	2	-	-	-	3	1	2	1	1	-	2
CO5	1	2	-	1	-	3	-	3	1	2	1	3

Text Books:

1. The Constitution of India, 1st Edition, (Bare Act), Government Publication, 1950
2. Framing of Indian Constitution, 1st Edition, Dr. S. N. Busi, Dr. B. R. Ambedkar, 2015

Reference Books: 1. Indian Constitution Law, 7th Edition, M. P. Jain, Lexis Nexis, 2014

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: History of Making of the Indian Constitution, Philosophy of the Indian Constitution

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 Constitution – Meaning, Nature and Importance	1	30-06-2026		TLM2	
2.	Historical Background of Indian Constitution	1	02-07-2026		TLM2	
3.	Constituent Assembly – Formation and Objectives	1	07-07-2026		TLM1	
4.	Drafting Committee – Composition and Functions	1	09-07-2026		TLM2	
5.	Working of Drafting Committee	1	14-07-2026		TLM2	
6.	Philosophy of Indian Constitution	1	16-07-2026		TLM2	
7.	Preamble – Features and Significance	1	21-07-2026		TLM2	
8.	Salient Features of Indian Constitution	1	23-07-2026		TLM2	
No. of classes required to complete UNIT-I: 08				**No. of classes taken:**		

UNIT-II: Contours of Constitutional Rights & Duties

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Fundamental Rights – Overview	1	28-07-2026		TLM1	
10.	Right to Equality	1	30-07-2026		TLM1	
11.	Right to Freedom	1	04-08-2026		TLM1	
12.	Right against Exploitation	1	06-08-2026		TLM1	
13.	Right to Freedom of Religion	1	11-08-2026		TLM1	
14.	Cultural and Educational Rights	1	13-08-2026		TLM1	
15.	Right to Constitutional Remedies	1	18-08-2026		TLM1	
16.	Directive Principles of State Policy & Fundamental Duties	1	20-08-2026		TLM1	
No. of classes required to complete UNIT-II: 08				**No. of classes taken:**		
I MID EXAMINATIONS (25-08-2025 TO 30-08-2025)						

UNIT-III: Organs of Governance:

S. No.	Topics to be covered	No. of Classes Require	Tentative Date of Completion	Actual Date of Complet	Teaching Learning Methods	HOD Sign Weekly

		d		**ion**		
17.	Parliament – Composition and Structure Qualifications and Disqualifications of Members	1	01-09-2026		TLM1	
18.	Powers and Functions of Parliament	1	03-09-2026		TLM1	
19.	President – Election, Powers and Functions, Governor – Powers and Functions	1	08-09-2026		TLM1	
20.	Council of Ministers – Structure and	1	10-09-2026		TLM1	
21.	Functions, Judiciary – Supreme Court and High Courts	1	15-09-2026		TLM1	
22.	Appointment, Transfer, Qualifications, Powers and Functions of Judges	1	17-09-2026		TLM1	
No. of classes required to complete UNIT-III: 06				**No. of classes taken:**		

UNIT-IV: – Retrieval-Augmented Generation & Lang Chain Workflows:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**HOD Sign Weekly**
23.	District Administration – District Collector: Role and Importance	1	22-09-2026		TLM1	
24.	Municipalities – Introduction and Functions	1	24-09-2026		TLM1	
25.	Mayor and Elected Representatives	1	29-09-2026		TLM1	
26.	CEO of Municipal Corporation – Powers and Responsibilities	1	01-10-2026		TLM1	
27.	Panchayati Raj Institutions – Structure and Functions	1	06-10-2026		TLM1	
28.	Zila Panchayat, CEO Zila Panchayat and Block Level Administration	1	08-10-2026		TLM1	
No. of classes required to complete UNIT-IV: 06				**No. of classes taken:**		

UNIT-V: Election Commission

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.	Election Commission – Composition, Role and Functions	1	**13-10-2026**		TLM1	
30.	Chief Election Commissioner and Election Commissioners	1	**15-10-2026**		TLM1	
31.	State Election Commission – Structure and Functions	1	**27-10-2026**		TLM1	
32.	Welfare Bodies for SC/ST/OBC, National and State Commissions for Women	1	**29-10-2026**		TLM1	
No. of classes required to complete UNIT-V: 04				**No. of classes taken:**		

Content Beyond Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	1.Constitutional Development in the USA and UK, 2.Dr.B.R. Ambedkar's Contribution to Constitution Making	1	31-10-2026					
No. of classes		1			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

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
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. J.NAGESWARA RAO	Dr Ch Rajendra Babu	Dr Ch Rajendra Babu	**Dr .Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: B.Nirosha
Course Name & Code : DEEP LEARNING 23AM06
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/VII SEM /C **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Basic understanding of linear algebra, calculus, probability, and programming fundamentals, Python.

Course Objectives:

The main objectives of the course are to make students: • Understand the fundamentals of neural networks as well as some advanced topics such as recurrent neural networks, long short-term memory cells, and convolutional neural networks.

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

CO1	Understand the fundamental concepts of artificial neurons, perceptrons, and learning rules used in basic neural network models. **(Understand – L2)**
CO2	Apply feed-forward neural network architectures and backpropagation algorithms for supervised learning tasks. **(Apply – L3)**
CO3	Analyze various optimization and regularization techniques to improve deep neural network training performance. **(Analyze – L4)**
CO4	Demonstrate the working of RNNs, LSTMs, CNNs, and generative models (RBMs, DBMs) for sequential and visual data. **(Apply – L3)**
CO5	Apply GPT-based models for NLP, vision, and speech applications **(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	1	1	-	-	-	-	-	2	2	1	2	-
CO2	2	3	2	1	2	-	-	-	-	-	2	3	1	2	-
CO3	2	3	2	2	2	-	-	-	-	-	3	2	2	2	-
CO4	2	3	2	2	3	-	-	-	-	-	2	2	1	3	-
CO5	2	2	2	1	3	-	-	-	-	-	2	2	2	3	-
1 - Low **2 –**Medium **3 -** High															

TEXTBOOKS:

T1	Deep Learning, Ian Good fellow and Yoshua Bengio and Aaron Courville, MIT Press, 2016.

REFERENCE BOOKS:

R1	Neural Networks: A Systematic Introduction, RaúlRojas, 3.
R2	Pattern Recognition and Machine Learning, ChristopherBishop,2007
R3	Deep Learning with Python, François Chollet, Manning Publications,2017

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics

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's & PO'S	1	29/06/2026		TLM1, 2	
2.	Introduction	1	1/07/2026		TLM1, 2	
3.	Biological Neuron	2	02/07/2026 03/07/2026		TLM1, 2	
4.	Idea of computational units	1	04/07/2026		TLM1, 2	
5.	McCulloch–Pitts unit and Thresholding logic	3	06/07/2026 08/07/2026 09/07/2026		TLM1, 2	
6.	Linear Perceptron	1	10/07/2026		TLM1, 2	
7.	Perceptron Learning Algorithm	2	13/07/2026 15/07/2026		TLM1, 2	
8.	Linear separability	1	15/07/2026		TLM1, 2	
9.	Convergence theorem for Perceptron Learning Algorithm	3	16/07/2026 17/07/2026 18/07/2026		TLM1, 2	
10.	Activity	1	20/07/2026		TLM 3/7	
No. of classes required to complete UNIT-I: 16				**No. of classes taken:**		

UNIT-II: Feed forward Networks

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.	Multilayer Perceptron	2	22/07/2026 23/07/2026		TLM1,2	
12.	Gradient Descent	2	24/07/2026 25/07/2026		TLM1,2	
13.	Backpropagation	2	27/07/2026 29/07/2026		TLM1,2	
14.	Empirical Risk Minimization	2	30/07/2026 31/07/2026		TLM1,2	
15.	Regularization	2	01/08/2026 03/08/2026		TLM1,2	

16.	Autoencoders	2	05/08/2026 06/08/2026		TLM1,2	
17.	Deep Neural Networks	2	07/08/2026 10/08/2026		TLM1,2	
18.	Difficulty of training deep neural networks	2	12/08/2026 13/08/2026		TLM1,2	
19.	Greedy layer-wise training	2	14/08/2026 17/08/2026		TLM1,2	
20.	Activity -2	1	19/08/2026		TLM 7	
21.	Revision for MID-1	2	20/08/2026 21/08/2026 22/08/2026		TLM 3	
No. of classes required to complete UNIT-II: 21				**No. of classes taken:**		
I MID EXAMINATIONS (24-08-2026 TO 29-08-2026)						

UNIT-III: Better Training of Neural Networks

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.	Newer optimization methods for neural networks (Ada grad, ada delta, rms prop, adam, NAG),	4	31/08/2026 02/09/2026 03/09/2026 05/09/2026		TLM1,2	
23.	Second order methods for training	2	07/09/2026 09/09/2026		TLM1,2	
24.	Saddle point problem in neural networks	2	10/09/2026 11/09/2026		TLM1,2	
25.	Regularization methods (dropout, drop connect, batch normalization).	2	12/09/2026 16/09/2026		TLM1,2	
26.	Activity -3	1	17/09/2026		TLM 3/7	
No. of classes required to complete UNIT-III: 11				**No. of classes taken:**		

UNIT-IV: Recurrent Neural Networks & Convolutional Neural Networks

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Back propagation through time	1	18/09/2026		TLM1,2	
28.	Long Short-Term Memory	2	19/09/2026 21/09/2026		TLM1,2	
29.	Gated Recurrent Units	1	23/09/2026		TLM1,2	
30.	Bidirectional LSTMs	2	24/09/2026 25/09/2026		TLM1,2	
31.	Bidirectional RNNs	1	26/09/2026		TLM1,2	

32.	Activity -4	1	28/09/2026		TLM 7	
33.	LeNet, AlexNet	1	30/09/2026		TLM1,2	
34.	Generative models	2	01/10/2026 03/10/2026		TLM1,2	
35.	Restrictive Boltzmann Machines (RBMs)	1	05/10/2026		TLM1,2	
36.	Introduction to MCMC	1	07/10/2026		TLM1,2	
37.	Gibbs Sampling	1	08/10/2026		TLM1,2	
38.	gradient computations in RBMs	2	09/10/2026		TLM1,2	
39.	Deep Boltzmann Machines	1	10/10/2026		TLM1,2	
40.	Activity	1	12/10/2026		TLM 3/7	
No. of classes required to complete UNIT-IV: 18				**No. of classes taken:**		

UNIT-V: Recent trends

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
41.	Variational Auto encoders	1	14/10/2026		TLM1,2	
42.	Transformers	1	16/10/2026		TLM1,2	
43.	GPT Applications	1	17/10/2026		TLM1,2	
44.	Vision	1	26/10/2026		TLM1,2	
45	NLP	1	28/10/2026		TLM1,2	
46	Speech	1	30/10/2026		TLM1,2	
47.	Activity	1	31/10/2026		TLM3/7	
No. of classes required to complete UNIT-V: 07				**No. of classes taken:**		
II MID EXAMINATIONS (02-11-2026 TO 07-11-2026)						

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
1.		2	15/10/2026 29/10/2026		**TLM 3**	

Teaching Learning Methods			
TLM1	Chalk and talk	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM2	PPT	**TLM6**	Group Discussion/Project
TLM3	Tutorial	**TLM7**	Activity Based Learning
TLM4	Demonstration (Lab/Field Visit)		

PART-C

Evaluation PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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 engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**B.Nirosha**	**Dr. G. V. Suresh**	**Dr. K. Devi Priya**	**Dr. S. Nagarjuna Reddy**
Signature				

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
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING- SECTION -C

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.M.S.CHAKRAVARTHY
Course Name & Code : HUMAN RESOURCES & PROJECT MANAGEMENT (23HRPM01)
L-T-P Structure : **2-0-0** **Credits:** 2
Program/Sem/Sec : B.Tech/VI SEM /C **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Basic knowledge of management principles and organizational functions.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To explain the fundamentals of Human Resource Management and HR planning.
- To introduce training, development, performance appraisal, and career management.
- To discuss project management concepts, life cycle, and resource allocation.
- To compare project types and their unique management challenges.
- To apply project planning, implementation, control, and evaluation practices.

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

CO	Outcome	Bloom's Level
CO1	Explain fundamentals of HRM and HR planning	L2 – Understand
CO2	State training, development, and performance appraisal techniques	L1 – Remember
CO3	Interpret project management concepts and life cycle stages	L2 – Understand
CO4	Compare project types and their management challenges	L2 – Understand
CO5	Apply project planning, implementation, and evaluation techniques	L3 – Apply

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

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

TEXTBOOKS:

T1	Robert L. Mathis, John H. Jackson, Manas Ranjan Tripathy, *Human Resource Management*, Cengage Learning, 2016.
T2	Sharon Pande & Swapnalekha Basak, *Human Resource Management: Text and Cases*, Vikas Publishing, 2016.
T3	Stewart R. Clegg, Torgeir Skyttermoen, Anne Live Vaagaasar, *Project Management*, Sage Publications, 2021.
T4	K. Nagarajan, *Project Management*, New Age International Publishers, 2017.

REFERENCE BOOKS:

R1	Subba Rao P, *Personnel and Human Resource Management*, Himalaya Publications, 2013.
R2	K. Aswathappa, *Human Resource and Personnel Management*, Tata McGraw Hill, 2013.
R3	Prasanna Chandra, *Projects: Planning, Analysis, Selection, Financing, Implementation and Review*, Tata McGraw Hill, 1998.
R4	Vasanth Desai, *Project Management*, Himalaya Publications, 2018.
R5	Lalitha Balakrishnan & Gowri, *Project Management*, Himalaya Publishing House, 2022.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: HRM Fundamentals

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 HRM, Nature, Scope of HRM	1	29/06/26		TLM1, 2	
2.	Functions of HRM	1	01/07/26		TLM1, 2	
3.	Role of HR Manager, Emerging Trends	1	04/07/26		TLM1, 2	
4.	E-HRM, HR Audit Models	1	06/07/26		TLM1, 2	
5.	HR Planning	1	08/07/26		TLM1, 2	
6.	Demand & Supply Forecasting	1	11/07/26		TLM1, 2	
7.	Job Design	1	13/07/26		TLM1, 2	
8.	Recruitment Sources	1	15/07/26		TLM1, 2	
9.	Selection Procedures	1	18/07/26		TLM1, 2	
10.	Tutorial /Activity / Assignment	2	22/07/26		TLM 3/7	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: HRD & Performance Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	HRD	1	25/07/26		TLM1,2	
12.	HR Accounting Models	1	29/07/26		TLM1,2	
13.	Training & Development Methods	2	01/08/26		TLM1,2	
14.	Performance Appraisal Techniques	1	03/08/26		TLM1,2	
15.	Career Development	1	05/08/26		TLM1,2	
16.	Counseling and Group Interaction	1	08/08/26		TLM1,2	
17.	Tutorial /Activity / Assignment	2	12/08/26		TLM 3/7	
No. of classes required to complete UNIT-II: 9				**No. of classes taken:**		

UNIT-III: Project Management Basics

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Concept of Resource Management	1	17/08/26		TLM1,2	
19.	Project Environment	1	19/08/26		TLM1,2	
20.	Types of Projects	1	22/08/26		TLM1,2	
21.	DPR and Project Networks	1	31/08/26		TLM1,2	
22.	Project Life Cycle,	1	02/09/26		TLM1,2	
23.	Project Proposals, Monitoring Progress	1	05/09/26		TLM1,2	
24.	Project Appraisal & Selection,	1	07/09/26		TLM1,2	
25.	80-20 Rule, Communication Matrix	1	09/09/26		TLM1,2	
26.	Tutorial /Activity / Assignment	2	16/09/26		TLM 3/7	
No. of classes required to complete UNIT-III: 10				**No. of classes taken:**		

UNIT-IV: Project Challenges

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Unique Management Challenges for Different Project Types	3	23/09/26		TLM1,2	
28.	Abandonment Analysis	1	26/09/26		TLM1,2	
29.	Tutorial /Activity / Assignment	1	28/09/26		TLM 3/7	
No. of classes required to complete UNIT-IV: 05				**No. of classes taken:**		

UNIT-V: Project Implementation & Review

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.	Forms of Project Organization	01	30/09/26			
31.	Project Planning & Control	01	03/10/26			
32.	Human Aspects of Project Management	01	05/10/26			
33.	Prerequisites for Successful Implementation	01	07/10/26			
34.	Project Review	1	10/10/26			
35.	Performance Evaluation, Abandonment Analysis	1	28/10/26			
36.	Tutorial / Activity / Assignment	1	31/10/26		TLM3/7	
No. of classes required to complete UNIT-V: 07				**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
1.	revision	42	31-10-2026		**TLM 3**	

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 (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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	Apply knowledge of management and HRM principles.
PO 2	Analyse organizational and project challenges.
PO 3	Design HR and project solutions with ethical considerations.
PO 4	Conduct investigations and appraisals of HR & project practices.
PO 5	Use modern HRM and project management tools.
PO 6	Apply ethical principles and commit to professional ethics, responsibilities, and norms in HRM and project practices.
PO 7	Understand the impact of HR and project management solutions in societal and environmental contexts, and demonstrate the need for sustainable development.
PO 8	Function effectively as an individual, and as a member or leader in diverse teams and multidisciplinary settings..
PO 9	Communicate effectively on HRM and project activities with the academic, professional, and societal community through reports, presentations, and clear instructions.
PO 10	Demonstrate knowledge and understanding of management and financial principles, and apply these to manage projects and organizational resources.
PO 11	Recognize the need for lifelong learning and develop the ability to engage in continuous professional development in HRM and project management.
PO 12	Integrate global perspectives, adaptability, and innovation in HRM and project practices to meet evolving organizational needs.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Apply HRM practices in organizational contexts.
PSO 2	Design and manage projects effectively across industries.
PSO 3	Design and manage projects effectively across industries.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**M.S.CHAKRAVARTHY**			**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM : **R23_B. TECH-CSE-VII-Sem - C Sec**

ACADEMIC YEAR : 2026-27

COURSE NAME & CODE : **DEVOPS & 23IT08**

L-T-P STRUCTURE : 3-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **Mr. P. Nagababu**

COURSE COORDINATOR : **Mrs. B. Usha Rani**

1. Course Educational Objectives (CEOs):

The main objectives of this course are to:

- Describe the agile relationship between development and IT operations.
- Understand the skill sets and high-functioning teams involved in DevOps and related methods to reach a continuous delivery capability.
- Implement automated system update and DevOps lifecycle.

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

CO1	Understand SDLC, Agile methods, DevOps principles, workflows, and automation tools for software development and delivery. (Understand-L2)
CO2	Apply Git version control operations such as branching, merging, collaboration, unit testing, and perform code quality analysis using SonarQube. (Apply-L3)
CO3	Demonstrate build automation and continuous integration using Jenkins architecture, pipelines, and build management techniques. (Apply-L3)
CO4	Implement Continuous Delivery and containerization using Docker, including creating images, deploying containers, and publishing them. (Apply-L3)
CO5	Design and develop configurations using Ansible and deploy applications using Kubernetes/OpenShift container orchestration tools. (Analysis-L4)

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

SYLLABUS

UNIT - I:

Introduction to DevOps: Introduction to SDLC, Agile Model. Introduction to Devops. DevOps Features, DevOps Architecture, DevOps Lifecycle, Understanding Workflow and principles, Introduction to DevOps tools, Build Automation, Delivery Automation, Understanding Code Quality, and Automation of CI / CD. Release management, Scrum, Kanban, delivery pipeline, bottlenecks, examples

UNIT - II:

Source Code Management (GIT): The need for source code control, the history of source code management, Roles and code, source code management system and migrations. What is Version Control and GIT, GIT Installation, GIT features, GIT workflow, working with remote repository, GIT commands, GIT branching, GIT staging and collaboration. UNIT TESTING - CODE COVERAGE: Junit, nUnit & Code Coverage with Sonar Qube, SonarQube - Code Quality Analysis.

UNIT - III:

Build Automation - Continuous Integration (CI): Build Automation, what is CI Why Cl is Required, CI tools, Introduction to Jenkins (With Architecture), Jenkins workflow, Jenkins master slave architecture, Jenkins Pipelines, PIPELINE BASICS - Jenkins Master, Node, Agent, and Executor Freestyle Projects & Pipelines, Jenkins for Continuous Integration, Create and Manage Builds, User Management in Jenkins Schedule Builds, Launch Builds on Slave Nodes.

UNIT-IV:

Continuous Delivery (CD): Importance of Continuous Delivery, CONTINUOUS DEPLOYMENT CD Flow, Containerization with Docker: Introduction to Docker, Docker installation, Docker commands, Images & Containers, Docker File, running containers, working with containers and publish to Docker Hub.
Testing Tools: Introduction to Selenium and its features, JavaScript testing.

UNIT - V:

Configuration Management - ANSIBLE: Introduction to Ansible, Ansible tasks, Roles, Jinja templating, Vaults, Deployments using Ansible.
CONTAINERIZATION USING KUBERNETES (OPENSHIFT): Introduction to Kubernetes Namespace & Resources, CI/CD - On OCP, BC, DC &ConfigMaps, Deploying Apps on OpenShift Container Pods. Introduction to Puppet master and Chef.

TEXT BOOKS:

T1	Joyner, Joseph., Devops for Beginners: Devops Software Development Method Guide for Software Developers and It Professionals, 1st Edition Mihails Kono plows, 2015.
T2	Alisson Machado de Menezes., Hands-on DevOps with Linux,1st Edition, BPB Publications, India, 2021.

REFERENCE BOOKS:

R1	Len Bass, Ingo Weber, Liming Zhu. DevOps: A Software Architect's Perspective. Addison Wesley; ISBN-10
R2	Gene Kim Je Humble, Patrick Debois, John Willis. The DevOps Handbook, 1st Edition, IT Revolution Press, 2016.
R3	Verona, Joakim Practical DevOps, 1st Edition, Packt Publishing, 2016.
R4	Joakim Verona. Practical Devops, Ingram short title; 2nd edition (2018). ISBN10: 1788392574
R5	Deepak Gaikwad, Viral Thakkar. DevOps Tools from Practitioner's Viewpoint. Wiley publications. ISBN: 9788126579952

Course Delivery Plan

UNIT-I: Introduction to DevOps:

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Introduction to SDLC, Agile Model	2	29-06-2026 & 30-6-2026		TLM1&2	CO1	
2.	Introduction to Devops	1	01-07-2026		TLM1&2	CO1	
3.	DevOps Features, DevOps Architecture	2	02-07-2026 & 04-07-2026		TLM1&2	CO1	
4.	DevOps Lifecycle, Understanding Workflow and principles	2	06-07-2026 & 07-07-2026		TLM1&2	CO1	
5.	Introduction to DevOps tools	1	08-07-2026		TLM1&2	CO1	
6.	Build Automation, Delivery Automation	1	09-07-2026		TLM1&2	CO1	
7.	Understanding Code Quality and Automation of CI / CD	1	11-07-2026		TLM1&2	CO1	
8.	Release management, Scrum	2	13-07-2026 & 14-07-2026		TLM1&2	CO1	
9.	Kanban, delivery pipeline	2	15-07-2026 & 16-07-2026		TLM1&2	CO1	
10.	bottlenecks, examples.	2	18-07-2026 & 20-07-2026		TLM1&2	CO1	
	No. of classes required to complete UNIT-I	**16**			**No. of classes taken:**		

UNIT-II: Source Code Management (GIT):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
11.	The need for source code control	1	21-07-2026		TLM1&2	CO2	
12.	the history of source code management, Roles and code	2	22-07-2026& 23-07-2026		TLM1&2	CO2	
13.	source code management system and migrations	2	25-07-2026& 27-07-2026		TLM1&2	CO2	
14.	What is Version Control and GIT, GIT Installation, GIT features	2	28-07-2026& 29-07-2026		TLM1&2	CO2	
15.	GIT workflow, working with remote repository, GIT commands, GIT branching	2	30-07-2026 &01-08-2026		TLM1&2	CO2	
16.	GIT staging and collaboration	1	03-08-2026		TLM1&2	CO2	
17.	UNIT TESTING - CODE COVERAGE: Junit	1	04-08-2026		TLM1&2	CO2	
18.	nUnit & Code Coverage with Sonar Qube	2	05-08-2026& 06-08-2026		TLM1&2	CO2	
19.	SonarQube - Code Quality Analysis.	2	08-08-2026& 10-08-2026		TLM1&2	CO2	
	No. of classes required to complete UNIT-II	**15**			**No. of classes taken:**		

UNIT-III: Build Automation - Continuous Integration (CI):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
20.	Build Automation, what is CI Why Cl is Required	1	11-082026		TLM1&2	CO3	
21.	CI tools, Introduction to Jenkins (With	1	12-08-2026		TLM1&2	CO3	

	Architecture)						
22.	Jenkins workflow, Jenkins master slave architecture	1	13-08-2026		TLM1&2	CO3	
23.	Jenkins Pipelines, PIPELINE BASICS - Jenkins Master	2	17-08-2026 & 18-08-2026		TLM1&2	CO3	
24.	Node, Agent, and Executor	2	19-08-2026 &20-08-2026		TLM1&2	CO3	
25.	Freestyle Projects & Pipelines	2	22-08-2026 &31-08-2026		TLM1&2	CO3	
26.	Jenkins for Continuous Integration	2	01-09-2026 & 02-09-2026		TLM1&2	CO3	
27.	Create and Manage Builds	1	03-09-2026		TLM1&2	CO3	
28.	User Management in Jenkins Schedule Builds	1	05-09-2026		TLM1&2	CO3	
29.	Launch Builds on Slave Nodes	2	07-09-2026 & 08-09-2026		TLM1&2	CO3	
	No. of classes required to complete UNIT-III	**15**			**No. of classes taken:**		

UNIT-IV: Continuous Delivery (CD):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
30.	Importance of Continuous Delivery	1	09-09-2026		TLM1&2	CO4	
31.	CONTINUOUS DEPLOYMENT CD Flow	2	10-09-2026 &12-09-2026		TLM1&2	CO4	
32.	Containerization with Docker: Introduction to Docker	2	15-09-2026 &16-09-2026		TLM1&2	CO4	
33.	Docker installation, Docker commands	2	17-09-2026 &17-09-2026		TLM1&2	CO4	
34.	Images & Containers	1	19-09-2026		TLM1&2	CO4	
35.	Docker File, running containers	1	21-09-2026		TLM1&2	CO4	
36.	working with containers and publish to Docker Hub.	2	22-09-2026 &23-09-2026		TLM1&2	CO4	

37.	Testing Tools: Introduction to Selenium and its features	2	24-09-2026& 26-09-2026		TLM1&2	CO4	
38.	JavaScript testing.	1	28-09-2026		TLM1&2	CO4	
	No. of classes required to complete UNIT-IV	**14**			**No. of classes taken:**		

UNIT-V: Configuration Management – ANSIBLE:

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
39.	Introduction to Ansible, Ansible tasks	2	29-09-2026 &30-09-2026		TLM1&2	CO5	
40.	Roles, Jinja templating	1	01-10-2026		TLM1&2	CO5	
41.	Vaults, Deployments using Ansible.	1	03-10-2026		TLM1&2	CO5	
42.	CONTAINERIZATION USING KUBERNETES (OPENSHIFT)	2	05-10-2026 & 06-10-2026		TLM1&2	CO5	
43.	Introduction to Kubernetes Namespace & Resources	1	07-10-2026		TLM1&2	CO5	
44.	CI/CD - On OCP, BC	2	08-10-2026 & 09-10-2026		TLM1&2	CO5	
45.	DC &ConfigMaps	1	10-10-2026		TLM1&2	CO5	
46.	Deploying Apps on OpenShift Container Pods.	2	12-10-2026 & 13-10-2026		TLM1&2	CO5	
47.	Introduction to Puppet master and Chef.	2	14-10-2026 &15-10-2026		TLM1&2	CO5	
	No. of classes required to complete UNIT-V	**14**			**No. of classes taken:**		

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Jenkins installation	1	17-10-2026		TLM2	CO5	

Teaching Learning Methods

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	29-06-2026	22-08-2026	8W
I Mid Examinations	**24-08-2026**	**29-08-2026**	**1W**
II Phase of Instructions	31-08-2026	17-10-2026	7 W
Dussehra Holidays	19-10-2026	24-10-2026	1W
II Phase of instructions Contd..	26-10-2026	31-10-2026	1W
II Mid Examinations	**02-11-2026**	**07-11-2026**	**1W**
Preparation and Practical's	09-11-2026	14-11-2026	1W
Semester End Examinations	**16-11-2026**	**28-11-2026**	**2 W**

EVALUATION PROCESS:(R23 Regulation)

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

POs:(Program Outcomes)

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. P. Nagababu**	**Mrs. B. Usha Rani**	**Dr. Y.V. Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.N.Srikanth
Course Name & Code : GENERATIVE AI & 23IT10
L-T-P Structure : 4-1-0 **Credits:** 3
Program/Sem/Sec : B.Tech VII Sem CSE – C Section **A.Y.:** 2026-27

PREREQUISITE: Machine Learning Fundamentals, Deep Learning Basics

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of this course is

- Understand the basics of Generative AI.
- Know the basics of Text Generation.
- Understand the process of generating videos.
- Know about GAN and its variants.

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

CO1	Describe the fundamental concepts, types of generative models (GANs, VAEs), and the ethical challenges associated with Generative AI. **(Understand-L2)**
CO2	Explain the architecture of Large Language Models (BERT, GPT), the mechanics of Transformers, and the principles of Prompt Engineering. **(Understand-L2)**
CO3	Summarize the working principles of image generation techniques including GANs, Variational Auto encoders, and Stable Diffusion models. **(Understand-L2)**
CO4	Recognize the applications of generative models in creative domains such as painting, music, and style transfer, including the role of autonomous agents. **(Remember - L1)**
CO5	Identify open-source models, programming frameworks (Lang Chain, Hugging Face), and strategies for training, fine-tuning, and deploying generative models. **(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	3	1				3	2	3				1	1	2	
CO2	3	1	1	1						1		1	1	2	
CO3	3	1	1	1									1	2	
CO4	2					3			1				1	2	
CO5	2								1		2	1	2	2	
1 - Low			**2** –Medium								**3** – High				

Text Books:

T1. Denis Rothman, for Natural Language Processing and Computer Third Edition ,Packt Books, 2024

Reference Books:

R1. David Foster, Deep Books, 2024.

R2. Altaf Rehmani, AI for BlueRose One, 2024.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Generative AI

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	CEOs and COs Discussion, Introduction to Generative AI	1	29-06-2026		TLM1 & TLM2	
2	Historical Overview of Generative Modeling, Importance of Generative AI	1	30-06-2026		TLM1 & TLM2	
3	Generative Modeling vs Discriminative Modeling	1	01-07-2026		TLM1 & TLM2	
4	Types of Generative Models – Overview	1	03-0.7-2026		TLM1 & TLM2	
5	Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs)	1	04-07-2026		TLM1 & TLM2	
6	Tutorial	1	06-07-2026			
7	Autoregressive Models and Vector Quantized Diffusion Models	1	07-07-2026		TLM1 & TLM2	
8	Probabilistic Modeling and Generative Process	1	08-07-2026		TLM1 & TLM2	
9	Challenges of Generative Modeling	1	10-07-2026		TLM1 & TLM2	
10	Tutorial/ Activity	1	13-07-2026			
11	Ethical Aspects of AI and Responsible AI	1	14-07-2026		TLM1 & TLM2	
12	Future of Generative AI, Use Cases, Unit-I Revision	1	15-07-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Generative Models for Text

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13	Language Model Basics and Building Blocks of Language Models	1	17-07-2026		TLM1 & TLM2	
14	Transformer Architecture Overview	1	18-07-2026		TLM1 & TLM2	
15	Tutorial	1	20-07-2026			
16	Encoder and Decoder Architecture	1	21-07-2026		TLM1 & TLM2	
17	Attention Mechanisms in Transformers	1	22-07-2026		TLM1 & TLM2	
18	Generation of Text using Language Models	1	24-07-2026		TLM1 & TLM2	
19	BERT Model Architecture	1	25-07-2026		TLM1 & TLM2	
20	Tutorial/ Activity	1	27-07-2026			
21	GPT Models Architecture	1	28-07-2026		TLM1 & TLM2	
22	Autoencoding and Regression Models	1	29-07-2026		TLM2 & TLM4	

23	Exploring ChatGPT Applications	1	31-07-2026		TLM1 & TLM2	
24	Prompt Engineering – Designing Effective Prompts	1	01-08-2026		TLM1 & TLM2	
25	Tutorial	1	03-08-2026			
26	RLHF and Retrieval Augmented Generation (RAG)		04-08-2026		TLM1 & TLM2	
27	Multimodal LLMs, Hallucination Issues, Unit-II Revision	1	05-08-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-II: 15				**No. of classes taken:**		

I MID EXAMINATIONS 24-08-2026 TO 29-08-2026

UNIT-III: Generation of Images

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
28	Introduction to GANs	1	07-08-2026		TLM1 & TLM2	
29	Tutorial	1	10-08-2026			
30	Adversarial Training Process and Nash Equilibrium	1	11-08-2026		TLM1 & TLM2	
31	Variational Autoencoders (VAEs)	1	12-08-2026		TLM1 & TLM2	
32	Encoder–Decoder Architectures	1	14-08-2026		TLM1 & TLM2	
33	Tutorial	1	17-08-2026			
34	Stable Diffusion Models	1	18-08-2026		TLM1 & TLM2	
35	Transformer-Based Image Generation	1	19-08-2026		TLM1 & TLM2	
36	CLIP Model and Vision Transformers (ViT)	1	20-08-2026		TLM2 & TLM4	
37	DALL-E2 and DALL-E3	1	21-08-2026		TLM2 & TLM4	
38	Tutorial/ Activity	1	22-08-2026			
39	GPT-4V Applications	1	01-09-2026		TLM2 & TLM4	
40	Mode Collapse and Stability Issues	1	02-09-2026		TLM1 & TLM2	
41	Unit-III Revision	1	02-09-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-III: 14				**No. of classes taken:**		

UNIT-IV: Generation of Painting, Music and Play

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42	Variants of GANs and Types of GANs	1	05-09-2026		TLM1 & TLM2	
43	Tutorial	1	07-09-2026			
44	CycleGAN Architecture	1	08-09-2026		TLM2 & TLM3	
45	Using CycleGAN to Generate Paintings	1	09-09-2026		TLM2 & TLM4	
46	Neural Style Transfer	1	11-09-2026		TLM1 & TLM2	
47	Style Transfer Applications	1	15-09-2026		TLM2 & TLM4	
48	Music Generating RNN	1	16-09-2026		TLM1 & TLM2	
49	MuseGAN	1	18-09-2026		TLM1 &	

					TLM2	
50	Autonomous Agents	1	19-09-2026		TLM1 & TLM2	
51	Tutorial/ Activity	1	21-09-2026			
52	Deep Q Algorithm and Actor-Critic Network	1	22-09-2026		TLM1 & TLM2	
53	Unit-IV Revision	1	23-09-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Open Source Models and Programming Frameworks

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
54	Training and Fine-Tuning of Generative Models	1	25-09-2026		TLM1 & TLM2	
55	GPT4All, Transfer Learning and Pretrained Models	2	26-09-2026 & 28-09-2026		TLM1 & TLM2	
56	Tutorial	1	29-09-2026			
57	Training Vision Models and Google Copilot	1	30-09-2026		TLM1 & TLM2	
58	Programming Large Language Models	1	03-10-2026		TLM2 & TLM4	
59	LangChain Framework	1	05-10-2026		TLM2 & TLM4	
60	Open Source Models – LLaMA	1	06-10-2026		TLM1 & TLM2	
61	Tutorial/ Activity	1	07-10-2026			
62	Programming for TimeSformer	1	09-10-2026		TLM1 & TLM2	
63	Deployment of Generative Models	1	12-10-2026		TLM1 & TLM2	
64	Hugging Face Platform	1	13-10-2026		TLM2 & TLM4	
65	Unit-V Revision	1	14-10-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-V: 12				**No. of classes taken:**		

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

Content Beyond Syllabus

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes (COs)	Text Book Followed	HOD Sign
1	Agentic AI and Multi-Agent Systems	1	16-10-2026		TLM2, TLM4 & TLM6	CO4, CO5	R1	
2	Retrieval Augmented Generation (RAG) using LangChain Applications	1	17-10-2026		TLM2 & TLM4	CO2, CO5	R1	

3	Fine-Tuning Open Source LLMs using LoRA and PEFT	1	26-10-2026		TLM2 & TLM4	CO5	R1	
4	AI Coding Assistants (GitHub Copilot, Cursor AI, Code Generation Tools)	1	27-10-2026		TLM2, TLM4 & TLM6	CO5	R2	
5	Recent Trends in Generative AI (GPT-4o, Multimodal AI, AI Agents)	1	28-10-2026		TLM2 & TLM5	CO1, CO5	R2	
No. of Classes		5			No. of classes taken:			

Use Cases

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes (COs)	HOD Sign
1	Text Content Generation	1	30-10-2026		Hands-on	CO4, CO5	
2	Image and Multimedia Generation	1	31-10-2026		Hands-on	CO4, CO5	

II MID EXAMINATIONS 02-11-2026 TO 07-11-2026

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
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.N.Srikanth**	**Mr.D.Anil kumar**	**Dr. K Devi Priya**	**Dr. S. Nagarjuna Reddy**
Signature				

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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.G.Tabita
Course Name & Code : Utilization of Electrical Energy & 20EE83
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech, CSE-C., VII-Sem. A.Y : 2026-27

Pre-requisites : Basic Electrical Engineering

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: V K Mehta & Rohit Mehta, "Principles of Power System", Revised Edition, S.Chand Publications, 2022.

R2: A.Chakrabarthi, M.L.Soni, P.V.Gupta and U.S.Bhatnagar, "A Textbook on Power system Engineering", Dhanpat Rai Publishing Company (P) Ltd., 2008.

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	29-06-2026		TLM1	
2.	Advantages &applications of Electric heating	1	30-06-2026		TLM2	
3.	Classification of electric heating	1	02-07-2026		TLM2	
4.	Resistance heating	1	03-07-2026		TLM2	
5.	Arc heating	1	06-07-2026		TLM2	
6.	Induction heating	1	07-07-2026		TLM2	
7.	dielectric heating	1	09-07-2026		TLM2	
8.	Causes of failures of heating elements	1	10-07-2026		TLM2, TLM6	
9.	Materials for heating elements	1	13-07-2026		TLM2, TLM6	
10.	Requirement of good heating material	1	14-07-2026		TLM2	
11.	ARC Furnace	1	16-07-2026		TLM2, TLM4	
12.	Resistance welding	1	17-07-2026		TLM2	
13.	Spot welding, seam welding	1	20-07-2026		TLM2, TLM4	
14.	,Arc welding	1	21-07-2026		TLM2, TLM4	
15.	Comparison between AC and DC welding	1	23-07-2026		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	24-07-2026		TLM1	
17	Nature of light	1	27-07-2026		TLM2	
18	Laws of illumination	1	28-07-2026		TLM1	
19	Laws of illumination	1	30-07-2026		TLM1	
20	Lighting schemes, sources of light	1	31-07-2026		TLM2	
21	Fluorescent Lamp, CFL and LED	1	03-08-2026		TLM1, TLM4	
22	Sodium Vapor	1	04-08-2026		TLM1,	

	Lamp				TLM4	
23	Neon lamps	1	06-08-2026		TLM1, TLM2	
24	mercury vapor lamps	1	07-08-2026		TLM1, TLM2	
25	Comparision between tungsten &fluroscent tubes	1	10-08-2026		TLM1, TLM2	
26	Requirements of good lighting	1	11-08-2026		TLM2, TLM6	
27	Street lighting	1	13-08-2026		TLM2	
28	Assignment/Quiz	1	14-08-2026		TLM3	
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	17-08-2026		TLM2	
30	Elements of drive, advantages	1	18-08-2026		TLM2	
31	Factors affecting selection of motor	1	20-08-2026		TLM2	
32	Types of loads	1	21-08-2026		TLM2	
33	Industrial applications	1	31-08-2026		TLM1, TLM2	
34	Transient Characteristics of drives	1	01-09-2026		TLM1, TLM2	
35	Steady state characteristics of drives	1	03-09-2026		TLM1, TLM2	
36	Size of motor, Load Equalization	1	07-09-2026		TLM1, TLM2	
37	Assignment/Quiz	1	08-09-2026		TLM3	
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
38	Introduction	1	10-09-2026		TLM2	
39	Requirement of an ideal traction system	1	11-09-2026		TLM2	
40	Supply system for electric traction	1	15-09-2026		TLM2	
41	Train movement	1	17-09-2026		TLM2	
42	mechanism of train movement	1	18-09-2026		TLM2	
43	electric traction	1	21-09-2026		TLM1, TLM2	
44	Modern trends in electric traction,	1	22-09-2026		TLM2, TLM6	
45	Automation in traction	1	24-09-2026		TLM2,	

					TLM6	
46	Speed time curves for different services	1	25-09-2026		TLM1, TLM2	
47	Trapezoidal speed time curves	1	28-09-2026		TLM1, TLM2	
48	Quadrilateral speed time curves	1	29-09-2026		TLM1, TLM2	
49	Problems on train movement	1	01-10-2026		TLM2, TLM6	
50	Assignment/quiz	1	05-10-2026		TLM3	
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
51	Desirable characteristics	1	06-10-2026		TLM2	
52	Types of Tariff, Flat rate, Block-rate	1	08-10-2026		TLM2	
53	KVA maximum demand	1	09-10-2026		TLM1, TLM2	
54	Time of Day tariff	1	12-10-2026		TLM1, TLM2	
55	Disadvantages of low power factor, Advantages of improved p.f	1	13-10-2026		TLM1, TLM2	
56	Improvement devices , Power factor improvement using static capacitor	1	15-10-2026		TLM1, TLM2	
57	Most economical power factor	1	16-10-2026		TLM2	
58	Location of power factor improvement devices from consumer	1	26-10-2026		TLM1, TLM2	
59	Numericals on power factor improvement.		27-10-2026		TLM1, TLM2	
60	Assignment/quiz	1	29-10-2026		TLM3	
61	REVISION	1	30-10-2026		TLM2	
No. of classes required to complete UNIT-V : 11					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
57	Economic aspects in utilization of electrical energy	1	16-10-2026		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	29-06-2026	22-08-2026	8W
I Mid Examinations	24-08-2026	29-08-2026	1 W
II Phase of Instructions	31-08-2026	17-10-2026	7 W
Dussehra Holidays	19-10-2026	24-10-2026	1 W
II Phase of Instructions Contd.	26-10-2026	31-10-2026	1 W
II Mid Examinations	02-11-2026	07-11-2026	1 W
Preparation and Practicals	09-11-2026	14-11-2026	1 W
Semester End Examinations	16-11-2026	28-11-2026	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.

Mrs.G.Tabita	Dr.B.Pangedaiah	Dr.G.Nageswara Rao	Dr. P. Sobha Rani
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. N.V.Maha Lakshmi
Course Name & Code : **PROMPT ENGINEERING (23AMS1)**
L-T-P Structure : **1-0-3** **Credits:** 2
Program/Sem/Sec : B.Tech/CSE/VII/C **A.Y.:** 2026-27

PREREQUISITE: Basics of Computer Knowledge

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objectives of the course are to

- Apply iterative prompting for clarity and context.
- Create varied prompts to steer model outputs.
- Construct chain-of-thought and structured prompts.
- Develop retrieval-augmented pipelines to ground outputs.
- Evaluate LLM agents and multimodal apps for ethics and robustness.

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

CO1: Understand the fundamental principles, techniques, and design patterns of effective prompt engineering. **(Understand-L2)**
CO2: Apply prompt engineering techniques (e.g., zero-shot, few-shot, chain-of-thought) to enhance model performance. **(Apply-L3)**
CO3: Utilize Large Language Models (LLMs) to generate text, images, and code for creative and practical applications. **(Apply-L3)**
CO4: Evaluate LLM outputs using metrics like accuracy and relevance and refine prompts to minimize hallucinations and bias. **(Evaluate-L5)**
CO5: Implement ethical, safe, and secure prompting strategies to comply with data privacy and legal standards. **(Apply-L3)**

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

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

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

PART-B:

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	**Environment & Connectivity:** Install required packages (e.g., transformers, OpenAI); securely configure the API key; run a simple "Hello, world" prompt to verify model access.	01	1/7		
2.	**Foundations of Prompt Engineering:** Introduction to prompt engineering, definition, distinction between prompt engineering and model fine-tuning, motivation, benefits, and anatomy of a prompt.	03	3/7		
3.	**Baseline vs. Enhanced Prompts:** Execute a naïve prompt ("Write a one-paragraph bio of Ada Lovelace.") and an enhanced prompt that adds role framing, specificity, and explicit format instructions; compare both outputs for relevance, completeness, and style.	01	8/7		
4.	**Python Environment & LLM Connectivity:** Install required Python packages, configure API keys securely, connect to an LLM, and execute a simple "Hello, World" prompt.	03	10/7		
5.	**Effective Prompt Design:** Core principles of effective prompt design, iterative prompting lifecycle, common prompt pitfalls, and prompt remediation techniques.	01	15/7		
6.	**Iterative Refinement on a Simple Task:** Summarize the plot of the Shakespearean play Romeo and Juliet in two sentences through three rounds of prompt tweaking: a. Minimal instruction. b. Addition of length and style constraints. c. Specification of key content elements (setting and theme). Document how each iteration changes and improves the result.	03	17/7		
7.	**Diagnosing Prompt Failures & Edge Cases:** Craft a vague or contradictory prompt; analyze the failure mode (ambiguity, missing context, or format errors); refine the prompt by adding examples or clarifying instructions.	01	22/7		
8.	**Advanced Prompt Patterns:** Enhanced prompt anatomy, contextual details, explicit output specifications, prompt structuring, template design, and few-shot in-context prompting.	03	24/7		
9.	**Role-Based & Constraint Prompting:** Role-based prompting, negative prompting, constraint specification, instruction enforcement, and iterative	01	29/7		

	prompt refinement.				
10.	**Few-Shot vs. Zero-Shot Comparison:** Design and execute a zero-shot prompt and a few-shot prompt (with 2–3 exemplar input-output pairs) for a chosen text task (e.g., sentiment classification or translation); compare outputs for accuracy, consistency, and adherence to examples.	03	31/7		
11.	**Structured Output & Reasoning:** Prompting for structured outputs including lists, Markdown tables, JSON, YAML, chain-of-thought prompting, and task decomposition.	01	5/8		
12.	**Role-Based & Negative Prompting:** Craft a role-based prompt to establish a specific persona (e.g., "You are a financial advisor…"); then create a negative prompt to suppress undesired content (e.g., "Do not mention any brand names"); evaluate how each influences the model's response.	03	7/8		
13.	**Introduction to Retrieval-Augmented Generation (RAG):** Limitations of LLM knowledge, need for external data sources, RAG architecture, indexing, retrieval, and generation.	01	12/8		
14.	**Constraint Specification & Iterative Refinement:** Select an open-ended task (e.g., summarizing a technical article); issue a basic prompt; identify failures in length or format; refine the prompt by adding explicit constraints (word count, bullet format, etc.); document improvements over two refinement cycles.	03	14/8		
15.	**LangChain & LCEL Fundamentals:** Introduction to LangChain, LangChain Expression Language (LCEL), document loading, text splitting, embeddings, and vector stores.	01	19/8		
16.	**Structured Format Prompting:** Instruct the model to output information as bullet lists and Markdown tables (e.g., "List three benefits of daily exercise in a Markdown table with columns 'Benefit' and 'Description.'"); verify the output matches the requested structure.	03	21/8		
17.	**JSON/YAML Generation:** Provide a brief dataset description (e.g., three books with title, author, publication year) and prompt the model to produce valid JSON or YAML; use a parser to validate syntax and refine the prompt if errors occur.	01	2/9		
18.	**Building a Basic RAG Pipeline:** Construct a simple retrieval-generation workflow, retrieve relevant document chunks, generate responses, and compare results with direct prompting.	01	9/9		
19.	**Chain-of-Thought & Task Decomposition:** Present a multi-step problem (e.g., a logic puzzle) and apply zero-shot CoT prompting (e.g., "Let's think step by step.	03	11/9		

	Explain your reasoning before the final answer."); separately, decompose the problem into sequential sub-questions, collect partial answers, combine them, and compare accuracy against a direct-answer baseline.				
20.	**Introduction to LLM Agents:** Basic architecture of LLM agents, tool/function calling, and implementing a simple calculator agent.	01	16/9		
21.	**Building a Simple LCEL Chain:** Create a minimal LCEL script that accepts a fixed instruction (e.g., "Summarize this text: …"), passes it to an LLM, and prints the result; verify end-to-end execution.	03	18/9		
22.	**Multimodal AI:** Overview of multimodal AI models (VLMs), text-to-image prompting, image understanding, and prompt engineering for multimodal applications.	01	23/9		
23.	**Basic Data Indexing for RAG:** Load a small collection of documents; split them into uniform chunks (e.g., 200 tokens); generate embeddings for each chunk; store them in an in-memory vector store; inspect for consistency **Constructing & Running a Basic RAG Chain:** Build a pipeline that: a. Receives a user query. b. Retrieves the top-k relevant chunks. c. Constructs a combined prompt with context + query. d. Sends it to the LLM. e. Returns the answer. Test with sample queries and compare factual accuracy against a prompt without retrieval.	03	25/9		
24.	**Prompt Evaluation Techniques:** Manual evaluation methods, heuristic checks for accuracy, relevance, format compliance, and introduction to LLM-as-Judge.	01	30/9		
25.	**Prompt Security & Safety:** Prompt injection attacks, sensitive information risks, prompt-based mitigation strategies, and robustness techniques. **Ethics in Prompt Engineering:** Bias, misinformation, data privacy, responsible AI practices, and ethical considerations in prompt engineering.	01	7/10		
26.	**Building a Simple LLM Agent:** Register a tool (e.g., a calculator function) and craft prompts that instruct the agent to invoke it when required; implement using LangChain or a function-calling API; test on queries requiring tool execution. **Multimodal Prompting Exploration:** Generate images from detailed text prompts; feed one generated image into an image-understanding model or API with an appropriate prompt; compare the returned caption to	03	9/10		

	the original prompt to evaluate alignment.				
27.	**Prompt Evaluation & Ethics Workshop:** a. Select two existing prompts and generate multiple outputs; apply manual heuristic checks for accuracy, relevance, and format compliance. b. Use an "LLM-as-Judge" prompt (e.g., "Rate these outputs on a scale of 1–5 for clarity and correctness.") to automate evaluation. c. Design a prompt-injection test (e.g., "Ignore previous instructions…"), observe the response, then refine system prompts to mitigate the vulnerability.	01	14/10		
28.	**Prompt-Driven Application Development:** Introduction to Streamlit and Gradio for building and deploying prompt-driven AI applications.	03	16/10		
29.	**Course Review & Integrated Hands-on Exercise:** Review of all concepts, integrated prompt engineering exercise combining prompting, RAG, agents, structured outputs, evaluation, and discussion on continuous learning in prompt engineering.	01	28/10		
30.	Internal Exam	03	30/10		

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Day to Day Work:	15
Internal Test	15
Continuous Internal Assessment	30
Procedure	20
Execution & Results	30
Viva-voce	20
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
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. N.V.Maha Lakshmi**	**Dr.K.V.Pandu Rangarao**	**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.G.Sravani
Course Name & Code **:** CONSTITUTION OF INDIA & 23MC05
L-T-P Structure **: 2-0-0** **Credits:** 0
Program/Sem/Sec : B.Tech/VII SEM /C **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Nil
Course Objectives: The main objectives of the course are to

1.To make students understand the historical background and philosophy of the Indian Constitution.
2.To make students acquire knowledge of Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties.
3.To make students understand the structure, powers, and functions of the Legislature, Executive, and Judiciary.
4.To make students analyze the role and functioning of local self-government institutions and grassroots democracy.
5.To make students understand the role of the Election Commission and constitutional bodies for the welfare of marginalized sections.

COURSE OUTCOMES (COs): Upon successful completion of this course, the student should be able to

CO1	Explain the history, philosophy, and salient features of the Indian Constitution. **(Understand - L2)**
CO2	Describe Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties. (**Understand-L2)**
CO3	List the powers and functions of the Legislature, Executive, and Judiciary. **(Remember-L1)**
CO4	Interpret the structure and functioning of local administration and Panchayati Raj institutions. (**Understand-L2)**
CO5	Explain the role of the Election Commission and welfare institutions for SC/ST/OBC and women. **(Understand-L2)**

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

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

TEXTBOOKS:

T1	The Constitution of India, 1st Edition, (Bare Act), Government Publication, 1950
T2	Framing of Indian Constitution, 1st Edition, Dr. S. N. Busi, Dr. B. R. Ambedkar, 2015

REFERENCE BOOKS:

R1	Indian Constitution Law, 7th Edition, M. P. Jain, Lexis Nexis, 2014

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**History of Making of the Indian Constitution:** History	1	29/06/2026		TLM 2	
2.	Drafting Committee, (Composition & Working)	1	01/07/2026		TLM 2	
3.	**Philosophy of the Indian Constitution-** Preamble	1	06/07/2026		TLM 2	
4.	Salient, Features	1	08/07/2026		TLM 2	
No. of classes required to complete UNIT-I: 4				**No. of classes taken:**		

UNIT-II

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
5.	**Contours of Constitutional Rights & Duties:** Fundamental Rights	1	13/07/2026		TLM 2	
6.	Right to Equality, Right to Freedom,	1	15/07/2026		TLM 2	
7.	Right against Exploitation	1	20/07/2026		TLM 2	
8.	Right to Freedom of Religion	1	22/07/2026		TLM 2	
9.	Cultural and Educational Rights	1	27/07/2026		TLM 2	
10.	Right to Constitutional Remedies	1	29/07/2026		TLM 2	
11.	Directive Principles of State Policy	1	03/08/2026		TLM 2	
12.	Fundamental Duties	1	05/08/2026		TLM 2	
13.	**Activity Based Learning**	1	10/08/2026		TLM 2	
No. of classes required to complete UNIT-II: 08				**No. of classes taken:**		
MID-1 Examinations From 24-08-2026 to 29-08-2026						

UNIT-III

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14.	**Organs of Governance:** Parliament, Composition	1	12/08/2026		TLM 2	
15.	Qualifications and Disqualifications, Powers and Functions	1	17/08/2026		TLM 2	
16.	**Executive-** President, Governor, Council of Ministers, Judiciary	1	19/08/2026		TLM 2	
17.	Council of Ministers, Judiciary, Appointment and Transfer of Judges	1	31/08/2026		TLM 2	
18.	Qualifications, Powers and Functions	1	02/09/2026		TLM 2	
No. of classes required to complete UNIT-III: 05				**No. of classes taken:**		

UNIT-IV

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
19.	**Retrieval-Augmented Generation & LangChain Workflows:** Limitations of LLM internal	1	07/09/2026		TLM 2	
20.	**Local Administration:** District's Administration head, Municipalities: Introduction	1	09/09/2026		TLM 2	
21.	Mayor and role of Elected Representative CEO of Municipal Corporation	1	16/09/2026		TLM 2	
22.	Panchayati raj: Introduction, PRI: Zila Panchayat	1	21/09/2026		TLM 2	
23.	Elected officials and their roles, CEO Zila Pachayat: Position and role	1	23/09/2026		TLM 2	
24.	Block level: Organizational Hierarchy (Different departments),	1	28/09/2026		TLM 2	
25.	Village level: Role of Elected and Appointed officials, Importance of grass root democracy.	1	30/09/2026		TLM 2	
No. of classes required to complete UNIT-IV: 07				**No. of classes taken:**		

UNIT-V

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	**Election Commission:** Election Commission: Role and Functioning	1	05/10/2026		TLM 2	
27.	Chief Election Commissioner and EC, State EC: Role and Functioning	1	07/10/2026		TLM 2	
28.	Institute and Bodies for the welfare of SC/ST/OBC and women	1	12/10/2026		TLM 2	
29.	**Activity Based Learning**	1	14/10/2026		TLM 2	
No. of classes required to complete UNIT-V: 4				**No. of classes taken:**		
MID-2 Examinations from 02-11-2026 to 07-11-2026						

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actually Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	Constitutional Amendments in India	1	28/10/2026		**TLM 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

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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 engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mrs.G.Sravani			**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 : DEEP LEARNING 23AM06
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/VII SEM /D **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Basic understanding of linear algebra, calculus, probability, and programming fundamentals, Python.

Course Objectives:

The main objectives of the course are to make students: • Understand the fundamentals of neural networks as well as some advanced topics such as recurrent neural networks, long short-term memory cells, and convolutional neural networks.

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

CO1	Understand the fundamental concepts of artificial neurons, perceptrons, and learning rules used in basic neural network models. **(Understand – L2)**
CO2	Apply feed-forward neural network architectures and backpropagation algorithms for supervised learning tasks. **(Apply – L3)**
CO3	Analyze various optimization and regularization techniques to improve deep neural network training performance. **(Analyze – L4)**
CO4	Demonstrate the working of RNNs, LSTMs, CNNs, and generative models (RBMs, DBMs) for sequential and visual data. **(Apply – L3)**
CO5	Apply GPT-based models for NLP, vision, and speech applications **(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	1	1	-	-	-	-	-	2	2	1	2	-
CO2	2	3	2	1	2	-	-	-	-	-	2	3	1	2	-
CO3	2	3	2	2	2	-	-	-	-	-	3	2	2	2	-
CO4	2	3	2	2	3	-	-	-	-	-	2	2	1	3	-
CO5	2	2	2	1	3	-	-	-	-	-	2	2	2	3	-
1 - Low **2 –**Medium **3 -** High															

TEXTBOOKS:

T1	Deep Learning, Ian Good fellow and Yoshua Bengio and Aaron Courville, MIT Press, 2016.

REFERENCE BOOKS:

R1	Neural Networks: A Systematic Introduction, RaúlRojas, 3.
R2	Pattern Recognition and Machine Learning, ChristopherBishop,2007
R3	Deep Learning with Python, François Chollet, Manning Publications,2017

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics

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's & PO'S	1	29/06/2026		TLM1, 2	
2.	Introduction	1	30/06/2026		TLM1, 2	
3.	Biological Neuron	2	01/07/2026 02/07/2026		TLM1, 2	
4.	Idea of computational units	1	03/07/2026		TLM1, 2	
5.	McCulloch–Pitts unit and Thresholding logic	3	06/07/2026 07/07/2026 08/07/2026		TLM1, 2	
6.	Linear Perceptron	2	09/07/2026 10/07/2026		TLM1, 2	
7.	Perceptron Learning Algorithm	2	13/07/2026 14/07/2026		TLM1, 2	
8.	Linear separability	1	15/07/2026		TLM1, 2	
9.	Convergence theorem for Perceptron Learning Algorithm	3	16/07/2026 17/07/2026 20/07/2026		TLM1, 2	
10.	Activity -1	1	21/07/2026		TLM 3/7	
No. of classes required to complete UNIT-I: 17				**No. of classes taken:**		

UNIT-II: Feed forward Networks

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.	Multilayer Perceptron	2	22/07/2026 23/07/2026		TLM1,2	
12.	Gradient Descent	2	24/07/2026 27/07/2026		TLM1,2	
13.	Backpropagation	2	28/07/2026 29/07/2026		TLM1,2	
14.	Empirical Risk Minimization	2	30/07/2026 03/08/2026		TLM1,2	
15.	Regularization	2	04/08/2026 05/08/2026		TLM1,2	

16.	Autoencoders	2	06/08/2026 07/08/2026		TLM1,2	
17.	Deep Neural Networks	3	10/08/2026 11/08/2026 12/08/2026		TLM1,2	
18.	Difficulty of training deep neural networks	2	13/08/2026 14/08/2026		TLM1,2	
19.	Greedy layer-wise training	2	17/08/2026 18/08/2026		TLM1,2	
20.	Activity -2	1	19/08/2026		TLM 7	
21.	Revision for MID-1	2	20/08/2026 21/08/2026		TLM 3	
No. of classes required to complete UNIT-II: 22				**No. of classes taken:**		
I MID EXAMINATIONS (24-08-2026 TO 29-08-2026)						

UNIT-III: Better Training of Neural Networks

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.	Newer optimization methods for neural networks (Ada grad, ada delta, rms prop, adam, NAG),	4	31/08/2026 01/09/2026 02/09/2026 03/09/2026		TLM1,2	
23.	Second order methods for training	2	07/09/2026 08/09/2026		TLM1,2	
24.	Saddle point problem in neural networks	2	09/09/2026 10/09/2026		TLM1,2	
25.	Regularization methods (dropout, drop connect, batch normalization).	2	11/09/2026 15/09/2026		TLM1,2	
26.	Activity -3	1	16/09/2026		TLM 3/7	
No. of classes required to complete UNIT-III: 11				**No. of classes taken:**		

UNIT-IV: Recurrent Neural Networks & Convolutional Neural Networks

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Back propagation through time	1	17/09/2026		TLM1,2	
28.	Long Short-Term Memory	2	18/09/2026 21/09/2026		TLM1,2	
29.	Gated Recurrent Units	1	22/09/2026		TLM1,2	
30.	Bidirectional LSTMs	2	23/09/2026 24/09/2026		TLM1,2	
31.	Bidirectional RNNs	1	25/09/2026		TLM1,2	
32.	Activity -4	1	28/09/2026		TLM 7	
33.	LeNet, AlexNet	1	29/09/2026		TLM1,2	

34.	Generative models	2	30/09/2026 01/10/2026		TLM1,2	
35.	Restrictive Boltzmann Machines (RBMs)	1	05/10/2026		TLM1,2	
36.	Introduction to MCMC	1	06/10/2026		TLM1,2	
37.	Gibbs Sampling	1	07/10/2026		TLM1,2	
38.	gradient computations in RBMs	2	08/10/2026 09/10/2026		TLM1,2	
39.	Deep Boltzmann Machines	1	12/10/2026		TLM1,2	
No. of classes required to complete UNIT-IV: 17				**No. of classes taken:**		

UNIT-V: Recent trends

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.	Variational Auto encoders	1	13/10/2026		TLM1,2	
41.	Transformers	1	14/10/2026		TLM1,2	
42.	GPT Applications	1	16/10/2026		TLM1,2	
43.	Vision	1	26/10/2026		TLM1,2	
44.	NLP	1	27/10/2026		TLM1,2	
45.	Speech	1	28/10/2026		TLM1,2	
46.	Activity	1	30/10/2026		TLM3/7	
No. of classes required to complete UNIT-V: 07				**No. of classes taken:**		
II MID EXAMINATIONS (02-11-2026 TO 07-11-2026)						

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
1.		2	15/10/2026 29/10/2026		**TLM 3**	

Teaching Learning Methods			
TLM1	Chalk and talk	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM2	PPT	**TLM6**	Group Discussion/Project
TLM3	Tutorial	**TLM7**	Activity Based Learning
TLM4	Demonstration (Lab/Field Visit)		

PART-C

Evaluation PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5

I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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 engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mrs. M. Gayathri**	**Dr. G. V. Suresh**	**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: Dr. E. Hymavathi
Course Name & Code : HUMAN RESOURCES & PROJECT MANAGEMENT (23HRPM01)
L-T-P Structure : **2-0-0** **Credits:** 2
Program/Sem/Sec : B.Tech/VI SEM /D **A.Y.:** 2026-27
Regulations : R23

PREREQUISITE: Basic knowledge of management principles and organizational functions.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To explain the fundamentals of Human Resource Management and HR planning.
- To introduce training, development, performance appraisal, and career management.
- To discuss project management concepts, life cycle, and resource allocation.
- To compare project types and their unique management challenges.
- To apply project planning, implementation, control, and evaluation practices.

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

CO	Outcome	Bloom's Level
CO1	Explain fundamentals of HRM and HR planning	L2 – Understand
CO2	State training, development, and performance appraisal techniques	L1 – Remember
CO3	Interpret project management concepts and life cycle stages	L2 – Understand
CO4	Compare project types and their management challenges	L2 – Understand
CO5	Apply project planning, implementation, and evaluation techniques	L3 – Apply

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

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

TEXTBOOKS:

T1	Robert L. Mathis, John H. Jackson, Manas Ranjan Tripathy, *Human Resource Management*, Cengage Learning, 2016.
T2	Sharon Pande & Swapnalekha Basak, *Human Resource Management: Text and Cases*, Vikas Publishing, 2016.
T3	Stewart R. Clegg, Torgeir Skyttermoen, Anne Live Vaagaasar, *Project Management*, Sage Publications, 2021.
T4	K. Nagarajan, *Project Management*, New Age International Publishers, 2017.

REFERENCE BOOKS:

R1	Subba Rao P, *Personnel and Human Resource Management*, Himalaya Publications, 2013.
R2	K. Aswathappa, *Human Resource and Personnel Management*, Tata McGraw Hill, 2013.
R3	Prasanna Chandra, *Projects: Planning, Analysis, Selection, Financing, Implementation and Review*, Tata McGraw Hill, 1998.
R4	Vasanth Desai, *Project Management*, Himalaya Publications, 2018.
R5	Lalitha Balakrishnan & Gowri, *Project Management*, Himalaya Publishing House, 2022.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: HRM Fundamentals

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 HRM, Nature, Scope of HRM	1	30/06/26		TLM1, 2	
2.	Functions of HRM	1	03/07/26		TLM1, 2	
3.	Role of HR Manager, Emerging Trends	1	04/07/26		TLM1, 2	
4.	E-HRM, HR Audit Models	1	07/07/26		TLM1, 2	
5.	HR Planning	1	10/07/26		TLM1, 2	
6.	Demand & Supply Forecasting	1	14/07/26		TLM1, 2	
7.	Job Design	1	17/07/26		TLM1, 2	
8.	Recruitment Sources	1	18/07/26		TLM1, 2	
9.	Selection Procedures	1	21/07/26		TLM1, 2	
10.	Tutorial /Activity / Assignment	2	25/07/26		TLM 3/7	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: HRD & Performance Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	HRD	1	28/07/26		TLM1,2	
12.	HR Accounting Models	1	31/07/26		TLM1,2	
13.	Training & Development Methods	2	04/08/26		TLM1,2	
14.	Performance Appraisal Techniques	1	07/08/26		TLM1,2	
15.	Career Development	1	08/08/26		TLM1,2	
16.	Counseling and Group Interaction	1	11/08/26		TLM1,2	
17.	Tutorial /Activity / Assignment	2	18/08/26		TLM 3/7	
No. of classes required to complete UNIT-II: 9				**No. of classes taken:**		

UNIT-III: Project Management Basics

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Concept of Resource Management	1	21/08/26		TLM1,2	
19.	Project Environment	1	22/08/26		TLM1,2	
20.	Types of Projects	1	01/09/26		TLM1,2	
21.	DPR and Project Networks	1	05/09/26		TLM1,2	
22.	Project Life Cycle,	1	08/09/26		TLM1,2	
23.	Project Proposals, Monitoring Progress	1	11/09/26		TLM1,2	
24.	Project Appraisal & Selection,	1	12/09/26		TLM1,2	
25.	80-20 Rule, Communication Matrix	1	15/09/26		TLM1,2	
26.	Tutorial /Activity / Assignment	2	19/09/26		TLM 3/7	
No. of classes required to complete UNIT-III: 10				**No. of classes taken:**		

UNIT-IV: Project Challenges

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Unique Management Challenges for Different Project Types	3	26/09/26		TLM1,2	
28.	Abandonment Analysis	1	29/09/26		TLM1,2	
29.	Tutorial /Activity / Assignment	3	09/10/26		TLM 3/7	
No. of classes required to complete UNIT-IV: 7				**No. of classes taken:**		

UNIT-V: Project Implementation & Review

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.	Forms of Project Organization	1	10/10/26			
31.	Project Planning & Control	1	13/10/26			
32.	Human Aspects of Project Management	1	16/10/26			
33.	Prerequisites for Successful Implementation	1	17/10/26			
34.	Project Review	1	27/10/26			
35.	Performance Evaluation, Abandonment Analysis	1	30/10/26			
36.	Tutorial / Activity / Assignment	1	31/10/26		TLM3/7	
No. of classes required to complete UNIT-V: 7				**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
1.	revision	45	44		**TLM 3**	

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 (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, 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	Apply knowledge of management and HRM principles.
PO 2	Analyse organizational and project challenges.
PO 3	Design HR and project solutions with ethical considerations.
PO 4	Conduct investigations and appraisals of HR & project practices.
PO 5	Use modern HRM and project management tools.
PO 6	Apply ethical principles and commit to professional ethics, responsibilities, and norms in HRM and project practices.
PO 7	Understand the impact of HR and project management solutions in societal and environmental contexts, and demonstrate the need for sustainable development.
PO 8	Function effectively as an individual, and as a member or leader in diverse teams and multidisciplinary settings..
PO 9	Communicate effectively on HRM and project activities with the academic, professional, and societal community through reports, presentations, and clear instructions.
PO 10	Demonstrate knowledge and understanding of management and financial principles, and apply these to manage projects and organizational resources.
PO 11	Recognize the need for lifelong learning and develop the ability to engage in continuous professional development in HRM and project management.
PO 12	Integrate global perspectives, adaptability, and innovation in HRM and project practices to meet evolving organizational needs.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Apply HRM practices in organizational contexts.
PSO 2	Design and manage projects effectively across industries.
PSO 3	Design and manage projects effectively across industries.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr.E.Hymavathi**			**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM : **R23_B. TECH-CSE-VII-Sem - D Sec**

ACADEMIC YEAR : 2026-27

COURSE NAME & CODE : **DEVOPS & 23IT08**

L-T-P STRUCTURE : 3-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **Mr. P. Nagababu**

COURSE COORDINATOR : **Mrs. B. Usha Rani**

1. Course Educational Objectives (CEOs):

The main objectives of this course are to:

- Describe the agile relationship between development and IT operations.
- Understand the skill sets and high-functioning teams involved in DevOps and related methods to reach a continuous delivery capability.
- Implement automated system update and DevOps lifecycle.

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

CO1	Understand SDLC, Agile methods, DevOps principles, workflows, and automation tools for software development and delivery. (Understand-L2)
CO2	Apply Git version control operations such as branching, merging, collaboration, unit testing, and perform code quality analysis using SonarQube. (Apply-L3)
CO3	Demonstrate build automation and continuous integration using Jenkins architecture, pipelines, and build management techniques. (Apply-L3)
CO4	Implement Continuous Delivery and containerization using Docker, including creating images, deploying containers, and publishing them. (Apply-L3)
CO5	Design and develop configurations using Ansible and deploy applications using Kubernetes/OpenShift container orchestration tools. (Analysis-L4)

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

SYLLABUS

UNIT - I:

Introduction to DevOps: Introduction to SDLC, Agile Model. Introduction to Devops. DevOps Features, DevOps Architecture, DevOps Lifecycle, Understanding Workflow and principles, Introduction to DevOps tools, Build Automation, Delivery Automation, Understanding Code Quality, and Automation of CI / CD. Release management, Scrum, Kanban, delivery pipeline, bottlenecks, examples

UNIT - II:

Source Code Management (GIT): The need for source code control, the history of source code management, Roles and code, source code management system and migrations. What is Version Control and GIT, GIT Installation, GIT features, GIT workflow, working with remote repository, GIT commands, GIT branching, GIT staging and collaboration. UNIT TESTING - CODE COVERAGE: Junit, nUnit & Code Coverage with Sonar Qube, SonarQube - Code Quality Analysis.

UNIT - III:

Build Automation - Continuous Integration (CI): Build Automation, what is CI Why Cl is Required, CI tools, Introduction to Jenkins (With Architecture), Jenkins workflow, Jenkins master slave architecture, Jenkins Pipelines, PIPELINE BASICS - Jenkins Master, Node, Agent, and Executor Freestyle Projects & Pipelines, Jenkins for Continuous Integration, Create and Manage Builds, User Management in Jenkins Schedule Builds, Launch Builds on Slave Nodes.

UNIT-IV:

Continuous Delivery (CD): Importance of Continuous Delivery, CONTINUOUS DEPLOYMENT CD Flow, Containerization with Docker: Introduction to Docker, Docker installation, Docker commands, Images & Containers, Docker File, running containers, working with containers and publish to Docker Hub.
Testing Tools: Introduction to Selenium and its features, JavaScript testing.

UNIT - V:

Configuration Management - ANSIBLE: Introduction to Ansible, Ansible tasks, Roles, Jinja templating, Vaults, Deployments using Ansible.
CONTAINERIZATION USING KUBERNETES (OPENSHIFT): Introduction to Kubernetes Namespace & Resources, CI/CD - On OCP, BC, DC &ConfigMaps, Deploying Apps on OpenShift Container Pods. Introduction to Puppet master and Chef.

TEXT BOOKS:

T1	Joyner, Joseph., Devops for Beginners: Devops Software Development Method Guide for Software Developers and It Professionals, 1st Edition Mihails Kono plows, 2015.
T2	Alisson Machado de Menezes., Hands-on DevOps with Linux,1st Edition, BPB Publications, India, 2021.

REFERENCE BOOKS:

R1	Len Bass, Ingo Weber, Liming Zhu. DevOps: A Software Architect's Perspective. Addison Wesley; ISBN-10
R2	Gene Kim Je Humble, Patrick Debois, John Willis. The DevOps Handbook, 1st Edition, IT Revolution Press, 2016.
R3	Verona, Joakim Practical DevOps, 1st Edition, Packt Publishing, 2016.
R4	Joakim Verona. Practical Devops, Ingram short title; 2nd edition (2018). ISBN10: 1788392574
R5	Deepak Gaikwad, Viral Thakkar. DevOps Tools from Practitioner's Viewpoint. Wiley publications. ISBN: 9788126579952

Course Delivery Plan

UNIT-I: Introduction to DevOps:

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Introduction to SDLC, Agile Model	2	29-06-2026 &30-06-2026		TLM1&2	CO1	
2.	Introduction to Devops	1	02-07-2026		TLM1&2	CO1	
3.	DevOps Features, DevOps Architecture	2	03-07-2026 & 04-07-2026		TLM1&2	CO1	
4.	DevOps Lifecycle, Understanding Workflow and principles	2	06-07-2026 &07-07-2026		TLM1&2	CO1	
5.	Introduction to DevOps tools	1	09-07-2026		TLM1&2	CO1	
6.	Build Automation, Delivery Automation	1	10-07-2026		TLM1&2	CO1	
7.	Understanding Code Quality and Automation of CI / CD	1	11-07-2026		TLM1&2	CO1	
8.	Release management, Scrum	2	13-07-2026 & 14-07-2026		TLM1&2	CO1	
9.	Kanban, delivery pipeline	1	16-07-2026		TLM1&2	CO1	
10.	bottlenecks, examples.	2	17-07-2026 &18-07-2026		TLM1&2	CO1	
	No. of classes required to complete UNIT-I	**15**			**No. of classes taken:**		

UNIT-II: Source Code Management (GIT):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
11.	The need for source code control	1	20-07-2026		TLM1&2	CO2	
12.	the history of source code management, Roles and code	2	21-07-2026 &23-07-2026		TLM1&2	CO2	
13.	source code management system and migrations	2	24-07-2026& 25-07-2026		TLM1&2	CO2	
14.	What is Version Control and GIT, GIT Installation, GIT features	2	27-07-2026 &28-07-2026		TLM1&2	CO2	
15.	GIT workflow, working with remote repository, GIT commands, GIT branching	2	30-07-2026 &31-07-2026		TLM1&2	CO2	
16.	GIT staging and collaboration	1	01-08-2026		TLM1&2	CO2	
17.	UNIT TESTING - CODE COVERAGE: Junit	1	03-08-2026		TLM1&2	CO2	
18.	nUnit & Code Coverage with Sonar Qube	2	04-08-2026 &06-08-2026		TLM1&2	CO2	
19.	SonarQube - Code Quality Analysis.	2	07-08-2026 &08-08-2026		TLM1&2	CO2	
	No. of classes required to complete UNIT-II	**15**			**No. of classes taken:**		

UNIT-III: Build Automation - Continuous Integration (CI):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
20.	Build Automation, what is CI Why Cl is Required	1	10-08-2026		TLM1&2	CO3	
21.	CI tools, Introduction to Jenkins (With	1	11-08-2026		TLM1&2	CO3	

	Architecture)						
22.	Jenkins workflow, Jenkins master slave architecture	1	13-08-2026		TLM1&2	CO3	
23.	Jenkins Pipelines, PIPELINE BASICS - Jenkins Master	2	14-08-2026 &17-08-2026		TLM1&2	CO3	
24.	Node, Agent, and Executor	2	18-08-2026 & 20-08-2026		TLM1&2	CO3	
25.	Freestyle Projects & Pipelines	2	21-08-2026 & 22-08-2026		TLM1&2	CO3	
26.	Jenkins for Continuous Integration	2	31-08-2026 & 01-09-2026		TLM1&2	CO3	
27.	Create and Manage Builds	1	03-09-2026		TLM1&2	CO3	
28.	User Management in Jenkins Schedule Builds	1	05-09-2026		TLM1&2	CO3	
29.	Launch Builds on Slave Nodes	2	07-09-2026 & 08-09-2026		TLM1&2	CO3	
	No. of classes required to complete UNIT-III	**15**			**No. of classes taken:**		

UNIT-IV: Continuous Delivery (CD):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
30.	Importance of Continuous Delivery	1	10-09-2026		TLM1&2	CO4	
31.	CONTINUOUS DEPLOYMENT CD Flow	2	11-09-2026 & 12-09-2026		TLM1&2	CO4	
32.	Containerization with Docker: Introduction to Docker	2	15-09-2026 & 17-09-2026		TLM1&2	CO4	
33.	Docker installation, Docker commands	2	18-09-2026 & 19-09-2026		TLM1&2	CO4	
34.	Images & Containers	1	21-09-2026		TLM1&2	CO4	
35.	Docker File, running containers	1	22-09-2026		TLM1&2	CO4	
36.	working with containers and publish to Docker	2	24-09-2026 & 25-09-2026		TLM1&2	CO4	

	Hub.						
37.	Testing Tools: Introduction to Selenium and its features	1	26-09-2026		TLM1&2	CO4	
38.	JavaScript testing.	1	28-09-2026		TLM1&2	CO4	
	No. of classes required to complete UNIT-IV	**13**			**No. of classes taken:**		

UNIT-V: Configuration Management – ANSIBLE:

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
39.	Introduction to Ansible, Ansible tasks	2	29-09-2026 & 01-10-2026		TLM1&2	CO5	
40.	Roles, Jinja templating	1	03-10-2026		TLM1&2	CO5	
41.	Vaults, Deployments using Ansible.	1	05-10-2026		TLM1&2	CO5	
42.	CONTAINERIZATION USING KUBERNETES (OPENSHIFT)	2	06-10-2026 & 08-10-2026		TLM1&2	CO5	
43.	Introduction to Kubernetes Namespace & Resources	1	09-10-2026		TLM1&2	CO5	
44.	CI/CD - On OCP, BC	2	10-10-2026 & 12-10-2026		TLM1&2	CO5	
45.	DC &ConfigMaps	1	13-10-2026		TLM1&2	CO5	
46.	Deploying Apps on OpenShift Container Pods.	1	15-10-2026		TLM1&2	CO5	
47.	Introduction to Puppet master and Chef.	1	16-10-2026		TLM1&2	CO5	
	No. of classes required to complete UNIT-V	**12**			**No. of classes taken:**		

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Jenkins Installation	1	17-10-2026		TLM2	CO5	

Teaching Learning Methods

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	29-06-2026	22-08-2026	8W
I Mid Examinations	**24-08-2026**	**29-08-2026**	**1W**
II Phase of Instructions	31-08-2026	17-10-2026	7 W
Dussehra Holidays	19-10-2026	24-10-2026	1W
II Phase of instructions Contd..	26-10-2026	31-10-2026	1W
II Mid Examinations	**02-11-2026**	**07-11-2026**	**1W**
Preparation and Practical's	09-11-2026	14-11-2026	1W
Semester End Examinations	**16-11-2026**	**28-11-2026**	**2 W**

EVALUATION PROCESS:(R23 Regulation)

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

POs:(Program Outcomes)

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. P. Nagababu**	**Mrs. B. Usha Rani**	**Dr. Y.V. Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(An Autonomous Institution since 2010)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. D. Anil kumar
Course Name & Code : GENERATIVE AI & 23IT10
L-T-P Structure : 4-1-0 **Credits:** 3
Program/Sem/Sec : B.Tech VII Sem CSE – D Section **A.Y.:** 2026-27

PREREQUISITE: Machine Learning Fundamentals, Deep Learning Basics

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of this course is

- Understand the basics of Generative AI.
- Know the basics of Text Generation.
- Understand the process of generating videos.
- Know about GAN and its variants.

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

CO1	Describe the fundamental concepts, types of generative models (GANs, VAEs), and the ethical challenges associated with Generative AI. **(Understand-L2)**
CO2	Explain the architecture of Large Language Models (BERT, GPT), the mechanics of Transformers, and the principles of Prompt Engineering. **(Understand-L2)**
CO3	Summarize the working principles of image generation techniques including GANs, Variational Auto encoders, and Stable Diffusion models. **(Understand-L2)**
CO4	Recognize the applications of generative models in creative domains such as painting, music, and style transfer, including the role of autonomous agents. **(Remember - L1)**
CO5	Identify open-source models, programming frameworks (Lang Chain, Hugging Face), and strategies for training, fine-tuning, and deploying generative models. **(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	3	1				3	2	3				1	1	2	-
CO2	3	1	1	1						1		1	1	2	-
CO3	3	1	1	1									1	2	-
CO4	2					3			1				1	2	-
CO5	2								1		2	1	2	2	-
1 - Low			**2** –Medium							**3** – High					

Text Books:

T1. Denis Rothman, for Natural Language Processing and Computer Third Edition ,Packt Books, 2024

Reference Books:

R1. David Foster, Deep Books, 2024.

R2. Altaf Rehmani, AI for BlueRose One, 2024.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Generative AI

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	CEOs and COs Discussion, Introduction to Generative AI	1	29-06-2026		TLM1 & TLM2	
2	Historical Overview of Generative Modeling, Importance of Generative AI	1	30-06-2026		TLM1 & TLM2	
3	Generative Modeling vs Discriminative Modeling	1	01-07-2026		TLM1 & TLM2	
4	Types of Generative Models – Overview	1	02-07-2026		TLM1 & TLM2	
5	Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs)	1	04-07-2026		TLM1 & TLM2	
6	Tutorial	1	06-07-2026			
7	Autoregressive Models and Vector Quantized Diffusion Models	1	07-07-2026		TLM1 & TLM2	
8	Probabilistic Modeling and Generative Process	1	08-07-2026		TLM1 & TLM2	
9	Challenges of Generative Modeling	1	09-07-2026		TLM1 & TLM2	
10	Tutorial/Activity	1	13-07-2026			
11	Ethical Aspects of AI and Responsible AI	1	14-07-2026		TLM1 & TLM2	
12	Future of Generative AI, Use Cases, Unit-I Revision	1	15-07-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Generative Models for Text

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13	Language Model Basics and Building Blocks of Language Models	1	16-07-2026		TLM1 & TLM2	
14	Transformer Architecture Overview	1	18-07-2026		TLM1 & TLM2	
15	Tutorial	1	20-07-2026		TLM3	
16	Encoder and Decoder Architecture	1	21-07-2026		TLM1 & TLM2	
17	Attention Mechanisms in Transformers	1	22-07-2026		TLM1 & TLM2	
18	Generation of Text using Language Models	1	23-07-2026		TLM1 & TLM2	
19	BERT Model Architecture	1	25-07-2026		TLM1 & TLM2	
20	Tutorial	1	27-07-2026		TLM3	
21	GPT Models Architecture	1	28-07-2026		TLM1 & TLM2	
22	Autoencoding and Regression Models	1	29-07-2026		TLM2 & TLM4	

23	Exploring ChatGPT Applications	1	30-07-2026		TLM1 & TLM2	
24	Prompt Engineering – Designing Effective Prompts	1	01-08-2026		TLM1 & TLM2	
25	Tutorial/Activity	1	03-08-2026		TLM3 & TLM 7	
26	RLHF and Retrieval Augmented Generation (RAG)		04-08-2026		TLM1 & TLM2	
27	Multimodal LLMs, Hallucination Issues, Unit-II Revision	1	05-08-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-II: 15				**No. of classes taken:**		

I MID EXAMINATIONS 24-08-2026 TO 29-08-2026

UNIT-III: Generation of Images

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
28	Introduction to GANs	1	06-08-2026		TLM1 & TLM2	
29	Tutorial	1	10-08-2026		TLM3	
30	Adversarial Training Process and Nash Equilibrium	1	11-08-2026		TLM1 & TLM2	
31	Variational Autoencoders (VAEs)	1	12-08-2026		TLM1 & TLM2	
32	Encoder–Decoder Architectures	1	13-08-2026		TLM1 & TLM2	
33	Tutorial	1	17-08-2026		TLM3	
34	Stable Diffusion Models	1	18-08-2026		TLM1 & TLM2	
35	Transformer-Based Image Generation	1	19-08-2026		TLM1 & TLM2	
36	CLIP Model and Vision Transformers (ViT)	1	20-08-2026		TLM2 & TLM4	
37	DALL-E2 and DALL-E3	1	22-08-2026		TLM1 & TLM2	
38	Tutorial/Activity	1	31-08-2026		TLM3 & TLM 7	
39	GPT-4V Applications		01-09-2026		TLM1 & TLM2	
40	Mode Collapse and Stability Issues	1	02-09-2026		TLM1 & TLM2	
41	Unit-III Revision	1	03-09-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-III: 14				**No. of classes taken:**		

UNIT-IV: Generation of Painting, Music and Play

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42	Variants of GANs and Types of GANs	1	05-09-2026		TLM1 & TLM2	
43	Tutorial	1	07-09-2026		TLM3	
44	CycleGAN Architecture	1	08-09-2026		TLM1 & TLM2	
45	Using CycleGAN to Generate Paintings	1	09-09-2026		TLM2 & TLM4	
46	Neural Style Transfer	1	10-09-2026		TLM1 & TLM2	
47	Style Transfer Applications	1	15-09-2026		TLM2 & TLM4	

48	Music Generating RNN	1	16-09-2026		TLM1 & TLM2	
49	MuseGAN	1	17-09-2026		TLM1 & TLM2	
50	Autonomous Agents	1	19-09-2026		TLM1 & TLM2	
51	Tutorial/Activity	1	21-09-2026		TLM3 & TLM 7	
52	Deep Q Algorithm and Actor-Critic Network	1	22-09-2026		TLM1 & TLM2	
53	Unit-IV Revision	1	23-09-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Open Source Models and Programming Frameworks

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
54	Training and Fine-Tuning of Generative Models	1	24-09-2026		TLM1 & TLM2	
55	GPT4All, Transfer Learning and Pretrained Models	2	26-09-2026 & 28-09-2026		TLM1 & TLM2	
56	Tutorial	1	29-09-2026		TLM3	
57	Training Vision Models and Google Copilot	1	30-09-2026		TLM1 & TLM2	
58	Programming Large Language Models	1	01-10-2026		TLM2 & TLM4	
59	LangChain Framework	1	03-10-2026		TLM2 & TLM4	
60	Open Source Models – LLaMA	1	05-10-2026 & 06-10-2026		TLM1 & TLM2	
61	Tutorial/Activity	1	07-10-2026		TLM3 & TLM 7	
62	Programming for TimeSformer	1	08-10-2026		TLM1 & TLM2	
63	Deployment of Generative Models	1	12-10-2026		TLM1 & TLM2	
64	Hugging Face Platform	1	13-10-2026		TLM2 & TLM4	
65	Unit-V Revision	1	14-10-2026		TLM1 & TLM2	
No. of classes required to complete UNIT-V: 12				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project
TLM7	Activity		

Content Beyond Syllabus

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes (COs)	Text Book Followed	HOD Sign
1	Agentic AI and Multi-Agent Systems	1	15-10-2026		TLM2, TLM4 & TLM6	CO4, CO5	R1	
2	Retrieval Augmented Generation (RAG) using LangChain Applications	1	17-10-2026		TLM2 & TLM4	CO2, CO5	R1	
3	Fine-Tuning Open Source LLMs using LoRA and PEFT	1	26-10-2026		TLM2 & TLM4	CO5	R1	
4	AI Coding Assistants (GitHub Copilot, Cursor AI, Code Generation Tools)	1	27-10-2026		TLM2, TLM4 & TLM6	CO5	R2	
5	Recent Trends in Generative AI (GPT-4o, Multimodal AI, AI Agents)	1	28-10-2026		TLM2 & TLM5	CO1, CO5	R2	
No. of Classes		5			No. of classes taken:			

Use Cases

S. No.	Topics to be Covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes (COs)	HOD Sign
1	Text Content Generation	1	29-10-2026		Hands-on	CO4, CO5	
2	Image and Multimedia Generation	1	31-10-2026		Hands-on	CO4, CO5	

II MID EXAMINATIONS 02-11-2026 TO 07-11-2026

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. D. Anil Kumar**	**Mr. D. Anil Kumar**	**Dr. K Devi Priya**	**Dr. S. Nagarjuna Reddy**
Signature				

Department of Computer Science & Engineering
COURSE HANDOUT

Part-A

PROGRAM : B.Tech., VII-Sem., CSE Department

ACADEMIC YEAR : 2026-27

COURSE NAME & CODE : UTILIZATION OF ELECTRICAL ENERGY- 23EE83

L-T-P STRUCTURE : 3-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **D VENKATA LAKSHMI**

PRE-REQUISITES: BASIC ELECTRICAL ENGINEERING

COURSE EDUCATIONAL OBJECTIVES (CEOs): 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, the student will be able to
CO1: Understand mechanism of electric heating and electric welding. **(Understand-L2)**
CO2: Analyze performance of various lighting schemes. **(Understand-L2)**
CO3: Analyze the performance of electric drive systems. **(Understand-L2)**
CO4: Illustrate the different schemes of traction and its main components **(Understand-L2)**
CO5: Understand various tariff methods and power factor improvement techniques. **(Understand-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 1	PSO 2	PSO 3
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).

BOS APPROVED 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.

BOS APPROVED REFERENCE BOOKS

R1 V K Mehta & Rohit Mehta, "Principles of Power System", Revised Edition, S.Chand Publications, 2022.

R2 A.Chakrabarthi, M.L.Soni, P.V.Gupta and U.S.Bhatnagar, "A Textbook on Power system Engineering", Dhanpat Rai Publishing Company (P) Ltd., 2008.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Course Outcomes & Blooms Taxonomy Levels	1	01-07-2026		TLM1/ TLM2	CO1	T1	
2.	Advantages &applications of Electric heating	1	02-07-2026		TLM1/ TLM2	CO1	T1	
3.	Classification of electric heating	1	03-07-2026		TLM1/ TLM2	CO1	T1	
4.	Resistance heating	1	04-07-2026		TLM1/ TLM2	CO1	T1	
5.	Arc heating	1	08-07-2026		TLM1/ TLM2	CO1	T1	
6.	Induction heating	1	09-07-2026		TLM1/ TLM2	CO1	T1	
7.	Dielectric heating	1	10-07-2026		TLM1/ TLM2	CO1	T1	
8.	Causes of failures of heating elements	1	11-07-2026		TLM1/ TLM2	CO1	T1	
9.	Materials for heating elements	1	15-07-2026		TLM1/ TLM2	CO1	T1	
10.	Requirement of good heating material	1	16-07-2026		TLM1/ TLM2	CO1	T1	
11.	ARC Furnace	1	17-07-2026		TLM1/ TLM2	CO1	T1	
12.	Resistance welding	1	18-07-2026		TLM1/ TLM2	CO1	T1	
13.	Spot welding, seam welding	1	22-07-2026		TLM1/ TLM2	CO1	T1	
14.	Arc welding	1	23-07-2026		TLM1/ TLM2	CO1	T1	
15.	Comparison between AC and DC welding	1	24-07-2026		TLM1/ TLM2	CO1	T1	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
16	Introduction to Nature of light	1	25-07-2026		**TLM1/ TLM2**	CO2	T1	
17	Laws of illumination	1	29-07-2026		**TLM1/ TLM2**	CO2	T1	
18	Laws of illumination	1	30-07-2026		**TLM1/ TLM2**	CO2	T1	
19	Lighting schemes, sources of light	1	31-07-2026		**TLM1/ TLM2**	CO2	T1	
20	Fluorescent Lamp, CFL and LED	**1**	01-08-2026		**TLM1/ TLM2**	CO2	T1	
21	Sodium Vapor	1	05-08-2026		**TLM1/ TLM2**	CO2	T1	
22	Neon Lamp	1	06-08-2026		**TLM1/ TLM2**	CO2	T1	
23	Mercury vapor lamps	1	07-08-2026		**TLM1/ TLM2**	CO2	T1	
24	Comparison between tungsten &fluorescent tubes	1	08-08-2026		**TLM1/ TLM2**	CO2	T1	
25	Requirements of good lighting	1	12-08-2026		**TLM1/ TLM2**	CO2	T1	
26	Street lighting	1	13-08-2026		**TLM1/ TLM2**	CO2	T1	
27	Assignment/Quiz	1	14-08-2026		**TLM1/ TLM2**	CO2	T1	
No. of classes required to complete UNIT-II: 12					No. of classes taken:			

UNIT-III: ELECTRIC DRIVES

S.No	Topics to be covered	No. of Classess Required	Tentative Date of Completion	Actual Date of Completion	Teachingg Learningg Method	Learning Outcome COs	Text Book followed	HOD Sign Weekly
28	Introduction	1	15-08-2026		**TLM1/ TLM2**	CO3	T1	
29	Elements of drive, advantages	1	19-08-2026		**TLM1/ TLM2**	CO3	T1	
30	Factors affecting selection of motor	1	20-08-2026		**TLM1/ TLM2**	CO3	T1	
31	Types of loads	1	21-08-2026		**TLM1/ TLM2**	CO3	T1	
32	Industrial applications	1	22-08-2026		**TLM1/ TLM2**	CO3	T1	
33	Transient Characteristics of drives	1	02-09-2026		**TLM1/ TLM2**	CO3	T1	
34	Steady state characteristics of drives	1	03-09-2026		**TLM1/ TLM2**	CO3	T1	
35	Size of motor	1	04-09-2026		**TLM1/ TLM2**	CO3	T1	
36	Load Equalization	1	05-09-2026		**TLM1/ TLM2**	CO3	T1	
37	Assignment/Quiz	1	09-09-2026		**TLM3**	CO3	T1	
No. of classes required to complete UNIT-II: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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
38	Introduction	1	10-09-2026		TLM1	CO4	T1	
39	Requirement of an ideal traction system	1	11-09-2026		TLM1	CO4	T1	
40	Supply system for electric traction	1	12-09-2026		TLM1	CO4	T1	
41	Train movement	1	16-09-2026		TLM1	CO4	T1	
42	Mechanism of train movement	1	17-09-2026		TLM1	CO4	T1	
43	Traction motors	1	18-09-2026		TLM1	CO4	T1	
44	Modern trends in electric traction	1	19-09-2026		TLM1	CO4	T1	
45	Automation in traction	1	23-09-2026		TLM1	CO4	T1	
46	Speed time curves for different services	1	24-09-2026		TLM1	CO4	T1	
47	Trapezoidal and quadrilateral speed time curves	1	25-09-2026		TLM1	CO4	T1	
48	Problems on train movement	1	26-09-2026		TLM1	CO4	T1	
49	Assignment/quiz	1	30-09-2026		TLM3	CO4	T1	
No. of classes requiredto complete UNIT-IV:12					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
50	Desirable characteristics	1	01-10-2026		TLM1/ TLM2	CO5	T1	
51	Types of Tariff	1	02-10-2026		TLM1/ TLM2			
52	Flat rate & Block rate	1	03-10-2026		TLM1/ TLM2	CO5	T1	
53	KVA maximum demand & Time of Day tariff	1	07-10-2026		TLM1/ TLM2			
54	KVA maximum demand & Time of Day tariff	1	08-10-2026		TLM1/ TLM2	CO5	T1	
55	Adv & Dis adv of low power factor	1	09-10-2026		TLM1/ TLM2	CO5	T1	
56	P.F improvement using static capacitor	1	10-10-2026		TLM1/ TLM2	CO5	T1	
57	Most economical power factor	1	14-10-2026		TLM1/ TLM2	CO5	T1	
58	PF impr. devices from consumer	1	15-10-2026		TLM1/ TLM2	CO5	T1	
59	Assignment/Quiz	1	16-10-2026		TLM3	CO5	T1	
60	REVISION	2	17-10-2026 & 28-10-2026		TLM2	CO5	T1	
No. of classes required to complete UNIT-V:12					No. of classes taken:			

Contents beyond the Syllabus:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
61	Economic aspects in utilization of electrical energy	2	29-10-2026 30-10-2026		**TLM1/ TLM2**	

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 PROCES (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	29-06-2026	22-08-2026	**8 W**
I Mid Examinations	24-08-2026	29-08-2026	**1 W**
II Phase of Instructions	31-08-2026	17-10-2026	**7W**
Dussehra Holidays	19-10-2026	24-10-2026	**1W**
II Phase of Instructions	28-10-2026	31-10-2026	**1W**
II Mid Examinations	02-11-2026	07-11-2026	**1 W**
Preparation and Practicals	09-11-2026	14-11-2026	**1 W**
Semester End Examinations	16-11-2026	28-11-2026	**2 W**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1.	Pursue a successful career in the area of Information Technology or its allied fields..
PEO2.	Exhibit sound knowledge in the fundamentals of Information Technology and apply practical experience with programming techniques to solve real world problems.
PEO3.	Able to demonstrate self-learning, life-long learning and work in teams on multidisciplinary projects.
PEO4.	Able to understand the professional code of ethics and demonstrate ethical behaviour, effective communication, team work and leadership skills in their job.

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):

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

Ms.D.Venkata Lakshmi	Dr.AV.G.A.Martanda	Dr.M.S.Giridhar	Dr.P.Sobha Rani
Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**

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
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. B SIVARAMAKRISHNA
Course Name & Code (23AMS1) : **PROMPT ENGINEERING**
L-T-P Structure : **1-0-3** **Credits:** 2
Program/Sem/Sec : B.Tech/CSE/VII/D **A.Y.:** 2026-27

PREREQUISITE: Basics of Computer Knowledge

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objectives of the course are to

- Apply iterative prompting for clarity and context.
- Create varied prompts to steer model outputs.
- Construct chain-of-thought and structured prompts.
- Develop retrieval-augmented pipelines to ground outputs.
- Evaluate LLM agents and multimodal apps for ethics and robustness.

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

CO1: Understand the fundamental principles, techniques, and design patterns of effective prompt engineering. **(Understand-L2)**
CO2: Apply prompt engineering techniques (e.g., zero-shot, few-shot, chain-of-thought) to enhance model performance. **(Apply-L3)**
CO3: Utilize Large Language Models (LLMs) to generate text, images, and code for creative and practical applications. **(Apply-L3)**
CO4: Evaluate LLM outputs using metrics like accuracy and relevance and refine prompts to minimize hallucinations and bias. **(Evaluate-L5)**
CO5: Implement ethical, safe, and secure prompting strategies to comply with data privacy and legal standards. **(Apply-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	2	–	–	2	–	–	–	–	–	–	2	2	1	–
CO2	2	3	2	1	3	–	–	–	–	–	–	2	3	2	1
CO3	2	2	3	2	3	–	–	–	1	2	–	2	3	3	2
CO4	2	3	2	3	2	–	–	2	–	1	–	2	2	2	1
CO5	–	–	1	–	2	3	2	3	–	1	–	2	2	2	–

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

PART-B:

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	**Environment & Connectivity:** Install required packages (e.g., transformers, OpenAI); securely configure the API key; run a simple "Hello, world" prompt to verify model access.	03	29/6		
2.	**Foundations of Prompt Engineering:** Introduction to prompt engineering, definition, distinction between prompt engineering and model fine-tuning, motivation, benefits, and anatomy of a prompt.	01	2/7		
3.	**Baseline vs. Enhanced Prompts:** Execute a naïve prompt ("Write a one-paragraph bio of Ada Lovelace.") and an enhanced prompt that adds role framing, specificity, and explicit format instructions; compare both outputs for relevance, completeness, and style.	03	6/7		
4.	**Python Environment & LLM Connectivity:** Install required Python packages, configure API keys securely, connect to an LLM, and execute a simple "Hello, World" prompt.	01	9/7		
5.	**Iterative Refinement on a Simple Task:** Summarize the plot of the Shakespearean play Romeo and Juliet in two sentences through three rounds of prompt tweaking: a. Minimal instruction. b. Addition of length and style constraints. c. Specification of key content elements (setting and theme). Document how each iteration changes and improves the result.	03	13/7		
6.	**Effective Prompt Design:** Core principles of effective prompt design, iterative prompting lifecycle, common prompt pitfalls, and prompt remediation techniques.	01	16/7		
7.	**Diagnosing Prompt Failures & Edge Cases:** Craft a vague or contradictory prompt; analyze the failure mode (ambiguity, missing context, or format errors); refine the prompt by adding examples or clarifying instructions.	03	20/7		
8.	**Advanced Prompt Patterns:** Enhanced prompt anatomy, contextual details, explicit output specifications, prompt structuring, template design, and few-shot in-context prompting.	01	23/7		
9.	**Few-Shot vs. Zero-Shot Comparison:** Design and execute a zero-shot prompt and a few-shot prompt (with 2–3 exemplar input-output pairs) for a chosen text task (e.g., sentiment classification or translation); compare outputs for accuracy, consistency, and adherence to	03	3/8		

	examples.				
10.	**Role-Based & Constraint Prompting:** Role-based prompting, negative prompting, constraint specification, instruction enforcement, and iterative prompt refinement.	01	30/7		
11.	**Role-Based & Negative Prompting:** Craft a role-based prompt to establish a specific persona (e.g., "You are a financial advisor…"); then create a negative prompt to suppress undesired content (e.g., "Do not mention any brand names"); evaluate how each influences the model's response.	03	10/8		
12.	**Structured Output & Reasoning:** Prompting for structured outputs including lists, Markdown tables, JSON, YAML, chain-of-thought prompting, and task decomposition.	01	6/8		
13.	**Constraint Specification & Iterative Refinement:** Select an open-ended task (e.g., summarizing a technical article); issue a basic prompt; identify failures in length or format; refine the prompt by adding explicit constraints (word count, bullet format, etc.); document improvements over two refinement cycles.	03	17/8		
14.	**Introduction to Retrieval-Augmented Generation (RAG):** Limitations of LLM knowledge, need for external data sources, RAG architecture, indexing, retrieval, and generation.	01	13/8		
15.	**Structured Format Prompting:** Instruct the model to output information as bullet lists and Markdown tables (e.g., "List three benefits of daily exercise in a Markdown table with columns 'Benefit' and 'Description.'"); verify the output matches the requested structure.	03	24/8		
16.	**LangChain & LCEL Fundamentals:** Introduction to LangChain, LangChain Expression Language (LCEL), document loading, text splitting, embeddings, and vector stores.	01	20/8		
17.	**JSON/YAML Generation:** Provide a brief dataset description (e.g., three books with title, author, publication year) and prompt the model to produce valid JSON or YAML; use a parser to validate syntax and refine the prompt if errors occur.	03	31/8		
18.	**Building a Basic RAG Pipeline:** Construct a simple retrieval-generation workflow, retrieve relevant document chunks, generate responses, and compare results with direct prompting.	01	3/9		
19.	**Chain-of-Thought & Task Decomposition:** Present a multi-step problem (e.g., a logic puzzle) and apply zero-shot CoT prompting (e.g., "Let's think step by step. Explain your reasoning before the final answer."); separately, decompose the problem into sequential sub-	03	7/9		

	questions, collect partial answers, combine them, and compare accuracy against a direct-answer baseline.				
20.	**Introduction to LLM Agents:** Basic architecture of LLM agents, tool/function calling, and implementing a simple calculator agent.	01	10/9		
21.	**Building a Simple LCEL Chain:** Create a minimal LCEL script that accepts a fixed instruction (e.g., "Summarize this text: …"), passes it to an LLM, and prints the result; verify end-to-end execution.	03	21/9		
22.	**Multimodal AI:** Overview of multimodal AI models (VLMs), text-to-image prompting, image understanding, and prompt engineering for multimodal applications.	01	17/9		
23.	**Basic Data Indexing for RAG:** Load a small collection of documents; split them into uniform chunks (e.g., 200 tokens); generate embeddings for each chunk; store them in an in-memory vector store; inspect for consistency **Constructing & Running a Basic RAG Chain:** Build a pipeline that: a. Receives a user query. b. Retrieves the top-k relevant chunks. c. Constructs a combined prompt with context + query. d. Sends it to the LLM. e. Returns the answer. Test with sample queries and compare factual accuracy against a prompt without retrieval.	03	28/9		
24.	**Prompt Evaluation Techniques:** Manual evaluation methods, heuristic checks for accuracy, relevance, format compliance, and introduction to LLM-as-Judge.	01	8/10		
25.	**Building a Simple LLM Agent:** Register a tool (e.g., a calculator function) and craft prompts that instruct the agent to invoke it when required; implement using LangChain or a function-calling API; test on queries requiring tool execution. **Multimodal Prompting Exploration:** Generate images from detailed text prompts; feed one generated image into an image-understanding model or API with an appropriate prompt; compare the returned caption to the original prompt to evaluate alignment.	03	5/10		
26.	**Prompt Security & Safety:** Prompt injection attacks, sensitive information risks, prompt-based mitigation strategies, and robustness techniques. **Ethics in Prompt Engineering:** Bias, misinformation, data privacy, responsible AI practices, and ethical considerations in prompt engineering.	01	15/10		

27.	**Prompt Evaluation & Ethics Workshop:** a. Select two existing prompts and generate multiple outputs; apply manual heuristic checks for accuracy, relevance, and format compliance. b. Use an "LLM-as-Judge" prompt (e.g., "Rate these outputs on a scale of 1–5 for clarity and correctness.") to automate evaluation. c. Design a prompt-injection test (e.g., "Ignore previous instructions…"), observe the response, then refine system prompts to mitigate the vulnerability.	03	12/10		
28.	**Prompt-Driven Application Development:** Introduction to Streamlit and Gradio for building and deploying prompt-driven AI applications. **Course Review & Integrated Hands-on Exercise:** Review of all concepts, integrated prompt engineering exercise combining prompting, RAG, agents, structured outputs, evaluation, and discussion on continuous learning in prompt engineering.	01	29/10		
29.	Internal Exam	03	26/10		

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Day to Day Work:	15
Internal Test	15
Continuous Internal Assessment	30
Procedure	20
Execution & Results	30
Viva-voce	20
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

	information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr. B. Siva Rama Krishna**	**Dr.K.V.Pandu Rangarao**	**Dr. K.Devi Priya**	**Dr. S. Nagarjuna Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(An Autonomous Institution since 2010)
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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 : Dr. G.Minni
Course Name & Code : CONSTITUTION OF INDIA 23MC05
L-T-P Structure : 2-0-0 Credits: 0
Program/Sem/Sec : B.Tech./VII Sem./D Section A.Y.: 2026-27
PRE-REQUISITE: : NILL

COURSE EDUCATIONAL OBJECTIVE (CEO):

- To make students understand the historical background and philosophy of the Indian Constitution.
- To make students acquire knowledge of Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties.
- To make students understand the structure, powers, and functions of the Legislature, Executive, and Judiciary.
- To make students analyze the role and functioning of local self-government institutions and grassroots democracy.
- To make students understand the role of the Election Commission and constitutional bodies for the welfare of marginalized sections

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

CO1:	Explain the history, philosophy, and salient features of the Indian Constitution	**Understand –L2**
CO2:	Describe Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties.	**Understand – L2**
CO3:	List the powers and functions of the Legislature, Executive, and Judiciary	**Remember-L1**
CO4:	Interpret the structure and functioning of local administration and Panchayati Raj institutions.	**Understand – L2**
CO5:	Explain the role of the Election Commission and welfare institutions for SC/ST/OBC and women	**Understand – L2**

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

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

TEXTBOOKS:

1.. The Constitution of India, 1st Edition, (Bare Act), Government Publication, 1950

2. Framing of Indian Constitution, 1st Edition, Dr. S. N. Busi, Dr. B. R. Ambedkar, 2015

REFERENCE BOOKS:

1 Indian Constitution Law, 7th Edition, M. P. Jain, Lexis Nexis, 2014

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – I: History of Making of the Indian Constitution

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.	Discussion of CEO's and CO's	1	30-06-2026		TLM1	
2.	History of Making of the Indian Constitution	1	02-07-2026		TLM1	
3.	Drafting Committee, (Composition & Working)	1	07-07-2026		TLM1 TLM1	
4.	Philosophy of the Indian Constitution- Preamble	1	09-07-2026		TLM1	
5.	Salient, Features	1	14-07-2026		TLM1	
6	**Activity Based Learning**	1	16-07-2026		TLM1	
No. of classes required to complete UNIT – I: 6				**No. of classes taken:**		

UNIT – II: Contours of Constitutional Rights & Duties

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
7.	Fundamental Rights, Right to Equality, Right to Freedom, Right against Exploitation	1	21-07-2026		TLM1	
8.	Right to Freedom of Religion, Cultural and Educational Rights,	1	23-07-2026		TLM1	
9.	Right to Constitutional Remedies	1	28-07-2026		TLM1	
10.	Directive Principles of State Policy	1	30-07-2026		TLM1	
11.	Fundamental Duties.	1	04-08-2026		TLM1	
12	**Activity Based Learning**	1	06-08-2026		TLM1	
No. of classes required to complete UNIT – II: 6				**No. of classes taken:**		

UNIT-III: Organs of Governance:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	Parliament, Composition, Qualifications and Disqualifications,	1	11-08-2026		TLM1	
14.	Powers and Functions, Executive-President	1	13-08-2026		TLM1	
15.	Governor, Council of Ministers, Judiciary,	1	18-08-2026		TLM1	
16.	Appointment and Transfer of Judges	1	20-08-2026		TLM1	
17.	Qualifications, Powers and Functions	1	01-09-2026		TLM1	
18	**Activity Based Learning**	1	03-09-2026		TLM1	
No. of classes required to complete UNIT – III: 6				**No. of classes taken:**		

UNIT – IV: Retrieval-Augmented Generation & LangChain Workflows:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
19.	Limitations of LLM internal Local Administration: District's Administration head: Role and Importance	1	08-09-2026		TLM1	
20.	Municipalities: Introduction, Mayor and role of Elected Representative CEO of Municipal Corporation,	1	10-09-2026		TLM1	
21.	Panchayati raj: Introduction, PRI: Zila Panchayat, Elected officials and their roles	1	15-09-2026		TLM1	
22.	CEO Zila Pachayat: Position and role, Block level)	1	17-09-2026		TLM1	
23.	Organizational Hierarchy (Different departments)	1	22-09-2026		TLM1	
24	Village level: Role of Elected and Appointed officials	1	24-09-2026		TLM1	
25	Importance of grass root democracy	1	29-09-2026		TLM1	
26	**Activity Based Learning**	1	01-10-2026		TLM1	
No. of classes required to complete UNIT – IV: 8				**No. of classes taken:**		

UNIT – V: Election Commission

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Election Commission: Role and Functioning	1	06-10-2026		TLM1	
28.	Chief Election Commissioner and EC, State EC: Role and Functioning	1	08-10-2026		TLM1	
29.	Institute and Bodies for the welfare of SC/ST/OBC and women.	1	13-10-2026		TLM1	
30	**Activity Based Learning**	1	15-10-2026		TLM1	
No. of classes required to complete UNIT – V: 4				**No. of classes taken:**		

Content Beyond the Syllabus:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
31.	Constitutional Amendments in India	1	27-10-2026		TLM1	
32.	Important Constitutional Amendments	1	29-10-2026		TLM1	

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 (R23 Regulation):

Evaluation Task	Marks
Assignment – I (Units-I, II)	A1 = 5
I – Descriptive Examination (Units-I, II)	M1 = 15
I – Quiz Examination (Units-I, II)	Q1 = 10
Assignment – II (Unit-III, IV & V)	A2 = 5
II – Descriptive Examination (UNIT-III, IV & V)	M2 = 15
II – Quiz Examination (UNIT-III, 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)	-
Total Marks = CIE + SEE	30

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Name of the Faculty	**Dr. G.Minni**	**Dr.Ch.Rajendra Babu**	**Dr.Ch.Rajendra Babu**	**Dr. S. Nagarjuna Reddy**
Signature				