



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade & NBA (Under Tier - I)
 An ISO 21001:2018, 14001:2015, 50001:2018 Certified Institution
 Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
 L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.

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DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs.K.LAKSHMI DEVI

Course Name & Code : Internet of Things & 23AM04

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

Credits: 3

Program/Sem/Sec : B.Tech/VII SEM /A

A.Y.: 2026-27

Regulations : R23

PREREQUISITE: Object Oriented Programming

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- The objective of the course is to provide an understanding of different s/w process models and how to choose one among them by gathering the requirements from a client and specifying them. Using those requirements in the design of the software architecture based on the choices with the help of modules and interfaces. To enable s/w development, by using different testing techniques like unit, integration and functional testing, quality assurance can be achieved.

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

CO1	Understand the fundamental concepts of Internet of Things (IoT), including its architecture and communication protocols.
CO2	Implement the business models, IoT/M2M communication, and standardization layers used in IoT systems. (Apply-L3)
CO3	Apply design principles for web connectivity for connected devices. (Apply-L3)
CO4	Analyze data acquiring in IoT/M2M, application, storage, business integration and enterprise systems. (Analyze-L4)
CO5	Understand the use of cloud platforms and services for data collection, storage, and computing in IoT/M2M applications. (Understand-L2)

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

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

TEXTBOOKS:

T1	Internet of Things: Architecture, Design Principles And Applications, Rajkamal, McGraw Hill Higher Education
T2	Internet of Things, A.Bahgya and V.Madisetti, Univesity Press, 2015

REFERENCE BOOKS:

R1	Designing the Internet of Things, Adrian McEwen and Hakim Cassimally, Wiley
R2	Getting Started with the Internet of Things, Cuno Pfister , Oreilly
R3	Getting Started with the Internet of Things, Cuno Pfister , Oreilly

PART-B**COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I: The Internet of Things**

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.	An Overview of Internet of things	2	29/06/26 30/06/26		TLM1, 2	
2.	Internet of Things Technology,	2	01/07/26 02/07/26		TLM1, 2	
3.	Behind IoTs Sources of the IoTs	2	02/07/26 03/07/26		TLM1, 2	
4.	M2M Communication	2	06/07/26 07/07/26		TLM1, 2	
5.	Examples of IoTs	2	08/07/26 09/07/26		TLM1, 2	
6.	Design Principles for Connected Devices	2	10/07/26 13/07/26		TLM1, 2	
7.	Internet Connectivity Principles,	2	14/07/26 15/07/26		TLM1, 2	
8.	Internet connectivity	2	16/07/26 17/07/26		TLM1, 2	
9.	Application Layer Protocols:	2	20/07/26 21/07/26		TLM1, 2	
10.	HTTP, HTTPS, FTP, Telnet.	2	22/07/26 23/07/26		TLM2	
11.	Tutorial:	1	24/07/26		TLM 3	
No. of classes required to complete UNIT-I: 21				No. of classes taken:		
				No of Tutorials Taken:		

UNIT-II

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Business Models for Business Processes in the Internet of Things	2	27/07/26 28/07/26		TLM1,2	
13.	IoT/M2M systems LAYERS	2	29/07/26 30/07/26		TLM1,2	
14.	AND designs standardizations	2	31/07/26 03/08/26		TLM1,2	
15.	Modified OSI Stack for the IoT/M2M Systems	2	04/08/26 05/08/26		TLM1,2	

16.	ETSI M2M domains and	2	06/08/26 07/08/26		TLM1,2	
17.	High level capabilities,	2	10/08/26 11/08/26		TLM1,2	
18.	Communication Technologies	2	13/08/26 14/08/26		TLM1,2	
19.	Data Enrichment and Consolidation and	2	17/08/26 18/08/26		TLM1,2	
20.	Device Management Gateway Ease of designing and affordability	2	19/08/26 20/08/26		TLM1,2	
21.	Tutorial:	1	21/08/26		TLM3	
No. of classes required to complete UNIT-II: 19					No. of classes taken:	
					No of Tutorials Taken:	

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Design Principles for the Web Connectivity for Connected-Devices	2	31/08/26 01/09/26		TLM1,2	
23.	Web Communication protocols for Connected Devices	2	02/09/26 03/09/26		TLM1,2	
24.	Message Communication protocols for Connected Devices,	2	07/09/26 08/09/26		TLM1,2	
25.	Web Connectivity for Connected-Devices.	2	09/09/26 10/09/26		TLM1,2	
26.	ASSIGNMENT-3	1	11/09/26		TLM3	
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Data Acquiring,	2	15/09/26 16/09/26		TLM1,2	
28.	Organizing and Analytics in IoT/M2M	2	17/09/26 18/09/26		TLM1,2	
29.	Data Acquiring,	2	21/09/26 22/09/26		TLM1,2	
30.	Organizing and Analytics in IoT/M2M	2	23/09/26 24/09/26		TLM1,2	
31.	IOT/M2M Data Acquiring and Storage	2	28/09/26 29/09/26		TLM1,2	
32.	Business Models for Business Processes in the Internet Of Things,	2	30/09/26 01/10/26		TLM1,2	
33.	Organizing Data, Transactions	2	05/10/26 06/10/26		TLM1,2	

34.	Business Processes,	2	07/10/26 08/10/26		TLM1,2
35.	Integration and Enterprise Systems.	1	09/10/26		TLM1,2
36.	Tutorials:	1	12/10/26		TLM 3
No. of classes required to complete UNIT-IV: 18				No. of classes taken:	
				No of Tutorials Taken:	

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
37	Data Collection, Storage and Computing Using a Cloud Platform for IoT/M2M Applications/Services,	1	13/10/26		TLM1,2	
38	Data Collection, Storage and Computing Using cloud platform Everything as a service and Cloud Service Models	1	14/10/26		TLM1,2	
39	IOT cloud-based services using the Xively (Pachube/COSM)	1	15/10/26		TLM1,2	
40	Nimbits and other platforms Sensor	1	16/10/26		TLM1,2	
41	Participatory Sensing, Actuator,	1	26/10/26		TLM1,2	
42	Radio Frequency Identification	1	27/10/26		TLM1,2	
43	and Wireless, Sensor Network Technology,	1	28/10/26		TLM1,2	
44	Sensors Technology, Sensing the World.	1	29/10/26			
45	ASSIGNMENT-5	1	30/10/26		TLM3	
No. of classes required to complete UNIT-V: 9				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (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):

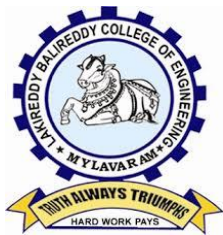
PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs..
PSO 3	Develop IT application services with the help of different current engineering tools..

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mrs.K.Lakshmi Devi	Mrs.K.Lakshmi Devi	Dr. B.Srinivasa Rao	Dr. D.Ratna Kishore
Signature				

Rules for CO-PO Articulation:

1. If CO addressing 50% of PIs of respective PO, then weightage is 3.
2. If CO addressing 30% to 50% of PIs respective PO, then weightage is 2.
3. If CO tags to 1%≤ 30% of PIs of respective PO, then weightage is 1.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		2.5.2, 2.6.3, 2.6.4 --- 3/14 21% 1	3.5.3, 3.6.1, 3.7.2 --- 3/14 21% 1											2.1, 2.2, 2.3 3	
CO2	1.6.1, 1.7.1 --- 2/5 40% 2	2.5.1, 2.5.2, 2.6.3 --- 3/14 21% 1	3.5.1, 3.5.2, 3.7.1 --- 3/14 21% 1											2.1, 2.2, 2.3 3	3.1, 3.2, 3.3 3
CO3		2.5.2, 2.6.3, 2.6.4, 2.7.1 --- 4/14 28% 1	3.5.1, 3.5.2, 3.5.3, 3.6.1, 3.6.2, 3.7.1, 3.7.2, 3.8.1, 3.8.2, 3.8.3 --- 10/14 72% 3											2.1, 2.2, 2.3 3	3.1, 3.2, 3.3 3
CO4	1.6.1, 1.7.1	2.5.2,												2.1,	3.1, 3.2,



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DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. T. Karuna Latha

Course Name & Code: SOFTWARE ARCHITECTURE & DESIGN PATTERN

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

Credits: 3

Program/Sem/Sec: B. Tech, IT, VII-Sem, A & B

A.Y: 2026-27

Course Objectives:

The main objectives of the course are to make student

- Understand the basic concepts to identify state behavior of real world objects
- Apply Object Oriented Analysis and Design concepts to solve complex problems
- Construct various UML models using the appropriate notation for specific problem context
- Design models to Show the importance of systems analysis and design in solving complex problems using case studies
- Study Pattern Oriented approach for real world problems

Course Outcomes:

C01	Understand fundamental concepts of Object-Oriented Analysis and Design , including object behavior, abstraction, encapsulation, and system modeling. (L2-Understand)
C02	Apply object-oriented design principles to develop conceptual models by identifying system requirements, classes, and relationships for real-world problems. (L3 - Apply)
C03	Apply modeling techniques using Unified Modeling Language to develop system design representations for given problem contexts. (L3 - Apply):
C04	Apply structural design patterns such as Adapter, Bridge, Composite, Decorator, Facade, Flyweight, and Proxy to solve design problems effectively. (L3 - Apply):
C05	Analyze interactive systems using architectural patterns such as Model-View-Controller , including subsystem design and feature integration. (L4 - Analyze)

CO\PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	Po12
C01	3	2	-	-	-	-	-	-	-	-	-	2
C02	3	3	2	2	2	-	-	-	-	-	-	2
C03	2	3	3	2	2	2	-	-	-	-	-	2
C04	2	3	3	2	2	3	-	-	-	-	-	2
C05	2	2	3	3	3	3	-	-	2	2	-	2

TEXTBOOKS:

1. Object Oriented Analysis, Design and Implementation, Brahma Dathan, Sarnath Rammath , Universities Press, 2013
2. Design Patterns, Erich Gamma, Richard Helan, Ralph Johman, John Vlissides, PEARSON Publication, 2013

REFERENCE BOOKS:

1. Frank Bachmann, Regine Meunier, Hans Rohnert "Pattern Oriented Software Architecture", Volume 1, 1996.
2. William J Brown et al, "Anti Patterns: Refactoring Software, Architectures and Projects in Crisis", John Wiley, 1998

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Introduction

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Design pattern, describing design patterns	2	29-06-2026 01-07-2026		TLM2	
2.	The catalog of design pattern organizing the catalog	2	02-07-2026 03-07-2026		TLM2	
3.	How design patterns solve design problems, how to select a design pattern	2	04-07-2026 06-07-2026		TLM2	
4	How to use a design pattern? What is object oriented development?	2	08-07-2026 09-07-2026		TLM2	
5.	Key concepts of object oriented design other related concept	2	10-07-2026 11-07-2026		TLM2	
6.	Benefits and drawbacks of the paradigm	2	13-07-2026 15-07-2026		TLM6	
7	Tutorial / Assignment	1	16-07-2026		TLM3	
No. of classes required to complete Unit -I		13	No. of classes taken:			

UNIT-II: Analysis a System

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8	Overview of the analysis phase	1	17-07-2026		TLM2	
9	Stage 1 gathering the requirements functional requirements specification	1	18-07-2026		TLM2	
10	Defining conceptual classes and relationships	2	20-07-2026 22-07-2026		TLM6	
11	Using the knowledge of the domain Design and Implementation	2	23-07-2026 24-07-2026		TLM2	
12	Discussions and further reading	2	25-07-2026 27-07-2026		TLM2	
13	Assignment	1	29-07-2026		TLM3	
No. of classes required to complete UNIT-II		09	No. of classes taken:			

(24-08-2026 TO 29-08-2026) I-MID EXAMS

UNIT-III: Design Pattern Catalog

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14	Structural patterns	2	30-07-2026 31-07-2026		TLM2	
15	Adapter	2	01-08-2026 03-08-2026		TLM2	
16	bridge	2	05-08-2026 06-08-2026		TLM2	
17	composite	2	07-08-2026 08-08-2026		TLM2 TLM2	
18	decorator	1	10-08-2026		TLM2	
19	facade, flyweight, proxy.	2	12-08-2026 13-08-2026		TLM6	
20	Tutorial	1	14-08-2026		TLM3	
No. of classes required to complete UNIT-III		11	No. of classes taken:			

UNIT-IV: Interactive systems and the MVC architecture

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign
21	Introduction The MVC architectural pattern	2	17-08-2026 19-08-2026			
22	Analyzing a simple drawing program designing the system	2	20-08-2026 21-08-2026		TLM2	
23	Designing of the subsystems, getting into implementation	2	22-08-2026 31-08-2026		TLM2	
24	Implementing undo operation drawing incomplete items	2	02-09-2026 03-09-2026		TLM2	
25	Adding a new feature pattern based solutions.	2	05-09-2026 07-09-2026		TLM4	
26	Tutorial	1	09-09-2026		TLM3	
No. of classes required to complete UNIT-IV		13	No. of classes taken:			

UNIT-V: Designing with Distributed Objects

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	Client server system	2	10-09-2026 11-09-2026		TLM2	
28	java remote method invocation	2	12-09-2026 16-09-2026		TLM2	
29	implementing an object oriented system on the web	2	17-09-2026 18-09-2026		TLM2	
30	Web services (SOAP, Restful)	2	21-09-2026 23-09-2026		TLM2	
31	Enterprise Service Bus.	2	24-09-2026 25-09-2026		TLM2	
32	Tutorial class	1	26-09-2026		TLM3	
No. of classes required to complete UNIT-V		11	No.of classes taken:			

(02-11-2026 TO 07-011-2026) II-MID EXAMS

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
Commencement of Class Work	29-06-2026		
I Phase of Instructions	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	9W
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	09-11-2026	14-11-2026	1W
Semester End Examinations	16-11-2026	28-11-2026	2W

PART-D**PROGRAMME OUTCOMES (POs):**

PO1	Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project Management and Finance: Demonstrate knowledge and understanding of the ring and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor	Module Coordinator	Course Coordinator	HOD
Mrs.T.karuna Latha	Dr.G.Rajendra	Mrs. T. Karuna Latha	Dr.D.Ratna Kishore

REFERENCE BOOKS:

R1	Artificial Neural Networks, Yegnanarayana, B., PHI Learning Pvt. Ltd, 2009
R2	Matrix Computations, Golub, G.,H., and Van Loan,C.,F, JHU Press,2013.
R3	Neural Networks: A Classroom Approach, Satish Kumar, Tata McGraw-HillEducation, 2004.

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 Biological Neuron	1	29-06-26		TLM 1	
2.	Idea of computational units	1	01-07-26		TLM 2	
3.	McCulloch–Pitts unit and Thresholding logic	1	02-07-26		TLM 1	
4.	Linear Perceptron	2	03-07-26 04-07-24		TLM 1	
5.	Perceptron Learning Algorithm	1	06-07-26		TLM 2	
6.	Linear separability	1	08-07-26 09-07-26		TLM 2	
7	Convergence theorem for Perceptron Learning Algorithm	2	10-07-26 11-07-26 13-07-26 15-07-26 16-07-26		TLM 2	
8	Assignment	1	17-07-26		TLM 1 & 2	
No. of classes required to complete UNIT-I: 13				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
9	Feed Forward Networks	2	18-07-26 20-07-26		TLM 2	
10	Multilayer Perceptron	2	22-07-26 23-07-26		TLM 2	
11	Gradient Descent	1	24-07-26		TLM 2	
12	Backpropagation	1	25-07-26		TLM 2	
13	Empirical Risk Minimization	2	27-07-26 29-07-26		TLM 1&2	

14	Regularization	1	30-07-26		TLM 1&2	
15	Autoencoders	1	01-08-26		TLM 1&2	
16	Deep Neural Networks	2	03-08-26 05-08-26		TLM 1&2	
17	Difficulty of training deep neural networks	1	06-08-26		TLM 1&2	
18	Greedy layer-wise training	1	07-08-26		TLM 1&2	
19	Assignment	1	08-08-26		TLM 1&2	
No. of classes required to complete UNIT-II: 15				No. of classes taken:		

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
20	Better Training of Neural Networks	1	10-08-26 12-08-26		TLM 1&2	
21	Newer optimization methods for neural networks (Adagrad, Adadelta, RMSProp, Adam, NAG)	3	12-08-26 13-08-26 14-08-26		TLM 1&2	
22	Second-order methods for training	3	17-08-26 19-08-26 20-08-26		TLM 1&2	
23	Saddle point problem in neural networks	3	21-08-26 22-08-26 31-08-26		TLM 1&2	
24	Regularization methods (dropout, drop connect, batch normalization)	4	02-09-26 03-09-26 05-09-26 07-09-26		TLM 1&2	
25	Assignment	1	09-09-26		TLM 1&2	
No. of classes required to complete UNIT-III: 15				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
26	Recurrent Neural Networks	1	10-09-26		TLM 2	
27	Backpropagation through time	1	11-09-26		TLM 2	
28	Long Short-Term Memory (LSTM)	1	12-09-26		TLM 2	
29	Gated Recurrent Units (GRU)	1	16-09-26		TLM 2	

30	Bidirectional LSTMs	1	17-09-26		TLM 1&2
31	Bidirectional RNNs	1	18-09-26		TLM 1&2
32	Convolutional Neural Networks	1	19-09-26		TLM 2 TLM 4 TLM 6
33	LeNet	1	21-09-26		TLM 1&2
34	AlexNet	1	23-09-26		TLM 1&2
35	Generative Models	1	24-09-26		TLM 1&2
36	Restricted Boltzmann Machines (RBMs)	2	25-09-26 26-09-26		TLM 1&2
37	Introduction to MCMC and Gibbs Sampling	2	28-09-26 30-09-26		TLM 1&2
38	Gradient computations in RBMs	2	01-10-26 03-10-26		TLM 1&2
No. of classes required to complete UNIT-IV: 16				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
39	Recent Trends	1	05-10-26		TLM 1&2	
40	Variational Autoencoders	2	07-10-26 08-10-26		TLM 1&2	
41	Transformers	2	09-10-26 10-10-26		TLM 2	
42	GPT Applications: Vision, NLP, Speech	6	12-10-26 14-10-26 15-10-26 16-10-26 17-10-26 26-10-26		TLM 2 TLM 4 TLM 6	
43	Assignment	1	28-10-26		TLM 1&2	
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
44	Osprey optimization technique	1	29-10-26		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:

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
Commencement of Class Work	29-06-2026		
I Phase of Instructions	29-06-2026	22-08-2026	8W
I Mid Examinations	24-08-2026	29-08-2026	1W
II Phase of Instructions	31-08-2026	31-10-2026	8W
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	2W

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

- PEO 1** Pursue a successful career in the area of Information Technology or its allied fields.
- PEO 2** Exhibit sound knowledge in the fundamentals of Information Technology and apply practical experience with programming techniques to solve real world problems.
- PEO 3** Able to demonstrate self-learning, life-long learning and work in teams on multidisciplinary projects.
- PEO 4** Able to understand the professional code of ethics and demonstrate ethical behavior, effective communication and team work and leadership skills in their job.

PROGRAMME OUTCOMES (POs):

- PO1** Engineering knowledge: Apply the knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering problems.
- PO2** Problem analysis: Identify, formulate, review research literature, and analyze complex Engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO4** Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solution sin societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO11** Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO12** Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.K.Rajasekhar	Dr.G.V.Suresh	Dr.S.Naganjaneyulu	Dr. D.Ratna Kishore
Signature				

TEXTBOOKS:

T1 Andrew Stellman, Jill Alison Hart, Learning Agile, O'Reilly, 2015.

REFERENCE BOOKS:

R1 Andrew Stellman, Jennifer Green, Head first Agile, O'Reilly, 2017.

R2 Rubin K , Essential Scrum : A Practical Guide To The Most Popular Agile Process, Addison-Wesley, 2013

PART-B**COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I: Learning Agile**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction, CO's	1	29-06-2026		TLM2	
2.	Agile terms	1	30-06-2026		TLM1,2	
3.	Getting Agile into your brain	1	01-07-2026		TLM1,2	
4.	Understanding Agile values	1	02-07-2026		TLM1,2	
5.	No Silver Bullet	1	03-07-2026		TLM2	
6.	Agile to the Rescue.	1	04-07-2026		TLM2	
7.	A fractured perspective	1	06-07-2026		TLM2	
8.	Tutorial	1	07-07-2026		TLM3	
9.	The Agile Manifesto,	1	09-07-2026		TLM2	
10.	Understanding the Elephant	1	10-07-2026		TLM2	
11.	Tutorial	1	13-07-2026		TLM2	
12.	Where to Start with a New Methodology	1	14-07-2026		TLM2	
13.	Revision	1	16-07-2026		TLM2	
No. of classes required to complete UNIT-I:13				No. of classes taken:		

UNIT-II: The Agile Principles

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14.	The 12 Principles of Agile Software	2	17-07-2026		TLM1,TLM2	
15.	The Customer Is Always Right	1	18-07-2026		TLM2	
16.	Delivering the Project	1	20-07-2026		TLM2	
17.	Better Project Delivery for the Ebook Reader	1	21-07-2026		TLM2	

	Project				
18.	Tutorial	1	23-07-2026		TLM2
19.	Communicating and Working Together	1	24-07-2026		TLM2
20.	Project Execution Moving the Project Along	2	25-07-2026		TLM2
21.	Constantly Improving the Project and the Team	1	27-07-2026		TLM2
22.	The Agile Project: Bringing All the Principles Together	2	28-07-2026		TLM2
No. of classes required to complete UNIT-II: 12				No. of classes taken:	

UNIT III: SCRUM and Self-Organizing Teams

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.	The Rules of Scrum, Act I: I Can Haz Scrum	1	29-07-2026		TLM2	
24.	Everyone on a Scrum Team owns the Project	1	30-07-2026		TLM2	
25.	Tutorial	1	31-07-2026		TLM2	
26.	Status Updates Are for Social Networks	1	01-08-2026		TLM2	
27.	The Whole Team Uses the Daily Scrum	1	03-08-2026		TLM2	
28.	Feedback and the Visibility-Inspection-Adaptation Cycle	1	04-08-2026		TLM2	
29.	Tutorial	1	06-08-2026		TLM2	
30.	The Last Responsible Moment	1	07-08-2026		TLM2	
31.	Sprinting into a Wall	1	10-08-2026		TLM2	
32.	Sprints, Planning, and Retrospectives	2	11-08-2026		TLM2	
33.	Tutorial	1	13-08-2026		TLM2	
34.	Scrum Planning And Collective Commitment: Not Quite Expecting the Unexpected,	1	14-08-2026		TLM2	
35.	Scrum Planning And Collective Commitment: Not Quite Expecting the Unexpected	1	17-08-2026		TLM2	
36.	User Stories, Velocity	1	18-08-2026		TLM2	
37.	Generally Accepted	1	20-08-2026		TLM2	

	Scrum Practices					
38.	Victory Lap, Scrum Values Revisited.	1	21-08-2026		TLM2	
39.	Role Play	1	31-08-2026		TLM6	
No. of classes required to complete UNIT-III: 18				No. of classes taken:		

UNIT-IV: XP And Embracing Change

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.	Going into Overtime, The Primary Practices of XP,	2	01-09-2026		TLM2	
41.	The Game Plan Changed, but We're Still Losing	1	02-09-2026		TLM2	
42.	The XP Values Help the Team Change Their Mindset	1	04-09-2026		TLM2	
43.	Tutorial	1	05-09-2026		TLM2	
44.	An Effective Mindset Starts with the XP Values	1	07-09-2026		TLM2	
45.	The Momentum Shifts, Understanding the XP Principles Helps You Embrace Change	1	08-09-2026		TLM2	
46.	Tutorial	1	10-09-2026			
47.	XP, Simplicity, and Incremental Design:	2	11-09-2026		TLM2	
48.	Tutorial	1	15-09-2026			
49.	Code and Design	1	17-09-2026		TLM2,TLM4	
50.	Make Code and Design Decisions at the Last Responsible Moment, Final Score.	1	18-09-2026		TLM2,TLM4	
No. of classes required to complete UNIT-IV: 13				No. of classes taken:		

UNIT-V: Lean, Eliminating Waste, and Seeing the whole:

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.	Lean Thinking, Creating Heroes and Magical Thinking.	1	18-09-2026		TLM2	
52.	Eliminate Waste, Gain a Deeper Understanding of the	1	19-09-2026		TLM2	

	Product				
53.	Tutorial	1	21-09-2026		
54.	Deliver As Fast As Possible.	1	22-09-2026		TLM2
55.	Kanban, Flow, and Constantly Improving:	2	24-09-2026		TLM2,TLM4
56.	The Principles of Kanban, Improving Your Process with Kanban,	1	26-09-2026		TLM2
57.	Tutorial	1	28-09-2026		TLM2
58.	Measure and Manage Flow	1	29-09-2026		TLM2
59.	Emergent Behavior with Kanban.	1	30-09-2026		TLM2
60.	The Agile Coach: Coaches Understand Why People Don't Always Want to Change.	1	01-10-2026		TLM2
61.	The Principles of Coaching.	1	05-10-2026		TLM2
No. of classes required to complete UNIT-V: 12				No. of classes taken:	

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

ACADEMIC CALENDAR: A.Y 2026-27

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	31-8-2026	17-10-2026	7W
Dusehra 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	1 W
Preparation and Practical	09-11-2026	14-11-2026	1 W
Semester End Examinations	16-11-2026	28-11-2026	2 W

Signature				
Name of the Faculty	Dr. Bhanu Pratap Reddy B	Dr. Bhanu Pratap Reddy B	Dr. G. Rajendra	Dr.D.RATHNA KISHORE
Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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DEPARTMENT OF INFORMATION AND TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor	: Dr. Murahari Kolli	
Course Name & Code	: ENTREPRENEURSHIP & 23ME84	
L-T-P Structure	: 3-0-0	Credits: 3
Program/Sem/Sec	: B.Tech/VII/A	A.Y.: 2026-27

PREREQUISITE: Production Technology

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective is to develop and strengthen entrepreneurial qualities and motivation among students, while also imparting fundamental entrepreneurial skills and knowledge necessary to run a business efficiently and effectively

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

CO1	Understand the fundamentals of entrepreneurship and identify the traits and competencies required for becoming a successful entrepreneur. (Understanding - L2)
CO2	Analyze the influence of family, society, and support institutions on entrepreneurial development and identify the role of training programs in fostering entrepreneurship. (Analyzing-L4)
CO3	Interpret central and state industrial policies and assess their impact on establishing and running a business, including aspects of international business. (Applying-L3)
CO4	Prepare a comprehensive business plan, including product selection, capital planning, ownership structure, and feasibility analysis to match entrepreneurial goals. (ApplyingL3)
CO5	Apply strategies for launching and managing small businesses, including finance and HR mobilization, marketing, product launching, and evaluating business performance. (Applying-L3)

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

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

TEXTBOOKS:

T1 Hisrich, Entrepreneurship, Tata McGraw Hill, New Delhi, 2001.

T2 S.S.Khanka, Entrepreneurial Development, S.Chand and Company Limited, New Delhi, 2001.

REFERENCE BOOKS:

R1 Mathew Manimala, Entrepreneurship Theory at the Crossroads, Paradigms & Praxis, Biztrantra, 2nd Edition, 2005

R2 Prasanna Chandra, Projects – Planning, Analysis, Selection, Implementation and Reviews, Tata McGraw-Hill, 1996.

R3 P.Saravanavel, Entrepreneurial Development, Ess Pee kay Publishing House, Chennai -1997.

R4 Arya Kumar. Entrepreneurship. Pearson. 2012 5. Donald F Kuratko, T.V Rao. Entrepreneurship: A South Asian perspective. Cengage Learning. 2012

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: ENTREPRENEURIAL COMPETENCE

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.	Syllabus, Importance of Subject, CO & PO's, Introduction Entrepreneurship	1	29.06.2026		TLM2	
2.	Entrepreneurship concept	1	01.07.2026		TLM2	
3.	Entrepreneurship as a Career-	1	02.07.2026		TLM2	
4.	Entrepreneurial Personality	1	04.07.2026		TLM2	
5.	Characteristics of Successful	1	06.07.2026		TLM2	
6.	Entrepreneu types	1	08.07.2026		TLM2	
7.	Knowledge and Skills of Entrepreneur.	1	09.07.2026		TLM2	
8.	Knowledge and Skills of Entrepreneur.	1	11.07.2026		TLM2	
9.	Differences between entrepreneur and manger	1	13.07.2026		TLM2	
10.	Case study-1	1	15.07.2026			
11.	Activity based class with Quiz	1	16.07.2026			
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II: ENTREPRENEURIAL ENVIRONMENT

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Business Environment	1	18.07.2026		TLM2	
13.	Role of Family and Society	1	20.07.2026		TLM2	
14.	Role of Family and Society	1	22.07.2026		TLM2	
15.	Role of Family and Society	1	23.07.2026		TLM2	
16.	Entrepreneurship Development Training	1	25.07.2026		TLM2	
17.	Entrepreneurship Development Training	1	27.07.2026		TLM2	
18.	Entrepreneurship Development Training	1	29.07.2026		TLM2	
19.	Other Support Organizational Services	1	30.07.2026		TLM2	
20.	Other Support Organizational Services	1	01.08.2026		TLM2	
21.	Other Support Organizational Services	1	03.08.2026		TLM2	

22.	Case study-2	1	05.08.2026			
23.	Activity based class with Quiz	1	06.08.2026			
No. of classes required to complete UNIT-II: 12				No. of classes taken:		

UNIT-III: INDUSTRIAL POLACIES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
24.	Central Government Industrial Policies	1	10.08.2026		TLM2	
25.	Central Government Industrial Policies	1	12.08.2026		TLM2	
26.	Central Government Industrial Policies Regulations	1	13.08.2026		TLM2	
27.	Central Government Industrial Policies Regulations	1	17.08.2026		TLM2	
28.	State Government Industrial Policies	1	19.08.2026		TLM2	
29.	State Government Industrial Policies	1	20.08.2026		TLM2	
30.	State Government Industrial Policies Regulations	1	22.08.2026		TLM2	
31.	International Business	1	31.08.2026		TLM2	
32.	International Business.	1	02.09.2026		TLM2	
33.	International Business.	1	03.09.2026		TLM2	
34.	Case study-3	1	05.09.2026			
35.	Activity based class with Quiz	1	07.09.2026			
No. of classes required to complete UNIT-III: 12				No. of classes taken:		
I-Mid Exams : 25.008.2025 to 30.08.2025						

UNIT-IV: BUSINESS PLAN PREPARATION

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
36.	Sources of Product for Business	1	09.09.2026		TLM2	
37.	Prefeasibility Study - Criteria for Selection of Product	1	10.09.2026		TLM2	
38.	Ownership - Capital	1	12.09.2026		TLM2	
39.	Budgeting Project Profile Preparation	1	16.09.2026		TLM2	
40.	Budgeting Project Profile Preparation	1	17.09.2026		TLM2	

41.	Matching Entrepreneur with the Project	1	21.09.2026		TLM2	
42.	Matching Entrepreneur with the Project	1	23.09.2026		TLM2	
43.	Feasibility Report Preparation	1	24.09.2026		TLM2	
44.	Evaluation Criteria.	1	26.09.2026		TLM2	
45.	Case study-4	1	28.09.2026			
46.	Activity based class with Quiz	1	30.09.2026			
No. of classes required to complete UNIT-IV: 11				No. of classes taken:		

UNIT-V: LAUNCHING OF SMALL BUSINESS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
47.	Finance and Human Resource Mobilization Operations Planning	1	01.10.2026		TLM2	
48.	Market and Channel Selection	1	03.10.2026		TLM2	
49.	Growth Strategies	1	06.10.2026		TLM2	
50.	Product Launching	1			TLM2	
51.	Incubation	1	07.10.2026		TLM2	
52.	Venture capital, IT startups	1	09.10.2026		TLM2	
53.	Monitoring and Evaluation of Business	1	10.10.2026		TLM2	
54.	Preventing Sickness and Rehabilitation of Business Units	1	13.10.2026		TLM2	
55.	Preventing Sickness and Rehabilitation of Business Units	1	14.10.2026		TLM2	
56.	Effective Management of small Business.	1	16.10.2026		TLM2	
57.	Effective Management of small Business.	1	20.10.2026		TLM2	
58.	Case study-5	1	21.10.2026			
59.	Activity based class with Quiz	1	23.10.2026			
60.	Revision class	1	24.10.2026			
No. of classes required to complete UNIT-V: 14				No. of classes taken:		
II-Mid Exams :				3.11.2025 to 08.11.2025		

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

ACADEMIC CALENDAR:

Commencement of VII Semester Classwork		29-06-2025	
I Phase of Instructions	29-06-2026	22-08-2026	8 Weeks
I Mid Examinations	24-08-2026	29-08--2026	1 Week
II Phase of Instructions	31-08-2026	17-10-2025	7 Weeks
Dussehra Holidays	19-10-2026	24-10-2026	1 Week
II Phase of Instructions Cont.	26-10-2026	31-10-2026	1 Week
II Mid Examinations	02-11-2026	07-11-2026	1 Week
Preparation and Practicals	09-11-2026	14-11-2026	1 Week
Semester End Examinations	16-11-2026	28-11-2026	2 Weeks

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 (III), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (III), IV & V)	M2=15
II-Quiz Examination (UNIT-III (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 OUTCOMES (POs):

PO 1	Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
PO 2	Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
PO 3	Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

PO 4	Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).
PO 5	Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
PO 6	The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).
PO 7	Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
PO 8	Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams
PO 9	Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
PO 10	Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
PO 11	Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor/ Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. Murahari Kolli	Mr. Subba Reddy	Dr. M.B.S.S Reddy
Signature			



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DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. T.MEGHANA

Course Name & Code : HUMAN RESOURCES & PROJECT MANAGEMENT (23HS03)

L-T-P Structure : 2-0-0 **Credits:** 2

Program/Sem/Sec : B.Tech/VII 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, <i>Human Resource Management</i> , Cengage Learning, 2016.
T2	Sharon Pande & Swapnalekha Basak, <i>Human Resource Management: Text and Cases</i> , Vikas Publishing, 2016.
T3	Stewart R. Clegg, Torgeir Skyttermoen, Anne Live Vaagaasar, <i>Project Management</i> , Sage Publications, 2021.
T4	K. Nagarajan, <i>Project Management</i> , New Age International Publishers, 2017.

REFERENCE BOOKS:

R1	Subba Rao P, <i>Personnel and Human Resource Management</i> , Himalaya Publications, 2013.
R2	K. Aswathappa, <i>Human Resource and Personnel Management</i> , Tata McGraw Hill, 2013.
R3	Prasanna Chandra, <i>Projects: Planning, Analysis, Selection, Financing, Implementation and Review</i> , Tata McGraw Hill, 1998.
R4	Vasanth Desai, <i>Project Management</i> , Himalaya Publications, 2018.
R5	Lalitha Balakrishnan & Gowri, <i>Project Management</i> , 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	02/07/26		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	09/07/26		TLM1, 2	
6.	Demand & Supply Forecasting	1	13/07/26		TLM1, 2	
7.	Job Design	1	16/07/26		TLM1, 2	
8.	Recruitment Sources	1	18/07/26		TLM1, 2	
9.	Selection Procedures	1	20/07/26		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	27/07/26		TLM1,2	
12.	HR Accounting Models	1	30/07/26		TLM1,2	
13.	Training & Development Methods	2	03/08/26		TLM1,2	
14.	Performance Appraisal Techniques	1	06/08/26		TLM1,2	
15.	Career Development	1	08/08/26		TLM1,2	
16.	Counseling and Group Interaction	1	10/08/26		TLM1,2	
17.	Tutorial /Activity / Assignment	2	17/08/26		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	20/08/26		TLM1,2	
19.	Project Environment	1	22/08/26		TLM1,2	
20.	Types of Projects	1	31/08/26		TLM1,2	
21.	DPR and Project Networks	1	03/09/26		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	10/09/26		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	3	08/10/26		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	12/10/26			
32.	Human Aspects of Project Management	1	15/10/26			
33.	Prerequisites for Successful Implementation	1	17/10/26			
34.	Project Review	1	26/10/26			
35.	Performance Evaluation, Abandonment Analysis	1	29/10/26			
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	T. MEGHANA	T. MEGHANA	Dr. K. DEEPIKA	Dr. D. RATNA KISHORE
Signature				



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DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

COURSE HANDOUT

Part-A

Program	:	B.Tech.(CSIT), VII-Semester
Academic Year	:	2026-2027
Course Name & CODE	:	PROMPT ENGINEERING (23AMS1)
L-T-P Structure	:	0-1-3
Course Credits	:	2
Course Instructor	:	Dr. K. VenuGopal
Pre-Requisites	:	NIL

Course Objectives:

- 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):

CO 1	Understand the fundamental principles, techniques, and design patterns of effective prompt engineering. (Understand-L2)
CO 2	Apply prompt engineering techniques (e.g., zero-shot, few-shot, chain-of-thought) to enhance model performance. (Apply - L3)
CO 3	Utilize Large Language Models (LLMs) to generate text, images, and code for creative and practical applications. (Apply - L3)
CO 4	Evaluate LLM outputs using metrics like accuracy and relevance, and refine prompts to minimize hallucinations and bias. (Evaluate-L5)
CO 5	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

TEXT BOOKS:

1. James Phoenix, Mike Taylor, "Prompt Engineering for Generative AI", O'Reilly, To Release in May 2024.
2. Gilbert Mizrahi, "Unlocking the Secrets of Prompt Engineering: Master the Art of Creative Language Generation to Accelerate Your Journey from Novice to Pro", January 2024.

WEB RESOURCES:

1. <https://www.oreilly.com/library/view/prompt-engineering-for/9781098153427/>
2. <https://www.packtpub.com/en-in/product/unlocking-the-secrets-of-prompt-engineering9781835083833>

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion SEC_A	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Unit-I: Foundations of Prompt Engineering: Definition of prompt engineering, Distinction between prompt engineering and model fine-tuning	1	29-06-2026		TLM2/ TLM3	CO1	
2.	Motivation and benefits of prompt engineering, Core principles of effective prompt design, EXP-1 1, EXP-1 2	3	30-06-2026		TLM2/ TLM4	CO1	
3.	Anatomy of a prompt, Setting up the Python environment for LLM interaction,	1	06-07-2026		TLM2/ TLM3	CO1	
4.	Iterative prompting lifecycle, Common prompt pitfalls and remediation EXP-1.3, EXP-1.4	3	14-07-2026		TLM2/ TLM4	CO1	
5.	Unit-II Advanced Prompt Patterns & Techniques: Enhanced prompt anatomy: contextual detail and explicit output specifications, Few-shot in-context prompting,	1	20-07-2026		TLM2/ TLM3	CO2	
6.	Prompt structuring and template design EXP-2.1,EXP-2.2	3	21-07-2026		TLM2/ TLM4	CO2	
7.	Role-based prompting to establish personas or system behavior, Negative prompting to filter or suppress undesired content	1	27-07-2026		TLM2/ TLM3	CO2	
8.	Constraint specification and instruction enforcement (e.g., length, format), Iterative prompt refinement and optimization EXP2.3 , Exp2.4	3	28-07-2026		TLM2/ TLM4	CO2	
9.	Unit-III Structured Output & Reasoning Techniques: Importance of structured outputs for real-world applications, Prompting for specific formats (lists, tables, Markdown),	1	10-08-2026		TLM2/ TLM3	CO3	

10.	Generating valid JSON and YAML via explicit instructions, Eliciting chain-of-thought reasoning in zero-shot prompts. Exp 3.1	3	11-08-2026		TLM2/ TLM4	CO3	
11.	Decomposing complex tasks into manageable sub-tasks	1	24-08-2026		TLM2/ TLM3	CO3	
12.	Exp-3.2 , Exp-3.3	3	25-08-2026		TLM4	CO3	
13.	Unit-IV : Retrieval-Augmented Generation & LangChain Workflows: Limitations of LLM internal knowledge, Need for external data sources, Introduction to Retrieval-Augmented Generation (RAG), Overview of RAG architecture (indexing vs. retrieval + generation),	1	07-09-2026		TLM2/ TLM3	CO4	
14.	Getting started with Lang Chain for LLM applications, Basics of Lang Chain Expression Language (LCEL), Simplified indexing pipeline: document loading & text splitting, Exp-4.1, Exp-4.2	3	08-09-2026		TLM3	CO4	
15.	Fundamentals of embeddings and vector stores, Building a basic retrieval-generation pipeline with an LCEL chain, Exp4.3	1	21-09-2026		TLM2/ TLM3	CO4	
16.	Unit-V : Agents, Multimodal AI & Ethical Evaluation: Introduction to LLM agents and their basic architecture, Overview of multimodal AI models (VLMs), Prompting for text-to- image generation and image understanding, Exp-5.1	3	29-09-2026		TLM2/ TLM4	CO5	
17.	Importance of prompt evaluation beyond subjective judgment, Manual evaluation techniques (heuristic checks for accuracy, relevance, format), Intro to “LLM-as-Judge” for automated evaluation, Security considerations promptInjection, sensitive - information risks),	1	05-10-2026		TLM2/ TLM3	CO5	

18.	Prompt-based mitigation strategies for safety and robustness, Ethical concerns (bias, misinformation, data privacy), Brief exploration of UI frameworks (Streamlit/Gradio) for deploying prompt-driven apps, Adapting to the evolving nature of prompt engineering through continuous learning Exp-5.2 ,Exp-5.3	3	06-10-2026		TLM2/ TLM4	CO5
19.	Programs Beyond Syllabus, Revision, Pending Etc/ Mini project	3	13-10-2026		TLM6	
20.	Lab Internal Examination	3	27-10-2026			

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
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

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions..
PSO 2	Design, Implement and evaluate a computer-based system to meet desired needs.
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	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Signature				
Name of the Faculty	Dr.K.VenuGopal	Dr.K.VenuGopal	Dr. K.V. Panduranga Rao	Dr.D.RatnaKishore



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade & NBA (Under Tier - I)
 An ISO 21001:2018, 14001:2015, 50001:2018 Certified Institution
 Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
 L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P. -521 230.

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DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor	: Dr. D. Ratna Kishore	
Course Name & Code	: Constitution of India (Audit Course) -23MC05	
Regulation	: R23	
L-T-P Structure	: 2-0-0	Credits: 00
Program/Sem/Sec	: B.Tech – VII Semester – A Section	A.Y.: 2026-27

PREREQUISITE: None

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 & PSO's):

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

Online Learning Resources:

https://onlinecourses.nptel.ac.in/e-learning/preview/noc25_lw09

PART-B**COURSE DELIVERY PLAN (LESSON PLAN): Constitution of India (Audit Course) -23MC05****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 CO'S and CEO'S	1	30-06-2026		TLM1 & 2	
2.	History	1	01-07-2026		TLM1 & 2	
3.	Drafting Committee, (Composition & Working)	2	07-07-2026 08-07-2026		TLM1 & 2	
4.	Philosophy of the Indian Constitution- Preamble	2	14-07-2026 15-07-2026		TLM1 & 2	
5.	Salient Features	2	21-07-2026 22-07-2026		TLM1 & 2	
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	
6.	Fundamental Rights, Right to Equality	2	28-07-2026 29-07-2026		TLM1 & 2		
7.	Right to Freedom, Right against Exploitation	2	04-08-2026		TLM1 & 2		
8.	Right to Freedom of Religion, Cultural and Educational Rights	2	05-08-2026		TLM1 & 2		
9.	Right to Constitutional Remedies	1	11-08-2026		TLM1 & 2		
10.	Directive Principles of State Policy	1	12-08-2026		TLM1 & 2		
11.	Fundamental Duties	1	18-08-2026		TLM1 & 2		
12.	Assignment -I/Quiz-I	1	19-08-2026		TLM7		
No. of classes required to complete UNIT-II: 10				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, Powers and Functions	1	01-09-2026		TLM1 & 2	
14.	Executive- President, Governor	1	02-09-2026		TLM1 & 2	
15.	Council of Ministers, Judiciary	1	08-09-2026		TLM1 & 2	
16.	Appointment and Transfer of Judges	1	09-09-2026		TLM1 & 2	

17.	Qualifications, Powers and Functions	1	15-09-2026		TLM1 & 2	
No. of classes required to complete UNIT-III: 05					No. of classes taken:	

UNIT-IV: Local Administration

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.	District's Administration head: Role and Importance	1	16-09-2026		TLM1 & 2	
19.	Municipalities: Introduction, Mayor and role of Elected Representative CEO of Municipal Corporation	1	23-09-2026		TLM1 & 2	
20.	Panchayati raj: Introduction, PRI: Zila Panchayat, Elected officials and their roles	1	29-09-2026		TLM1 & 2	
21.	CEO Zila Panchayat: Position and role Block level: Organizational Hierarchy (Different departments)	1	30-09-2026		TLM1 & 2	
22.	Village level: Role of Elected and Appointed officials Importance of grass root democracy	1	06-10-2026		TLM1 & 2	
No. of classes required to complete UNIT-IV: 05					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
23.	Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners	1	07-10-2026		TLM1 & 2	
24.	State Election Commission: Role and Functioning	1	13-10-2026		TLM1 & 2	
25.	Institute and Bodies for the welfare of SC & ST, Bodies for the welfare OBC and women	1	14-10-2026		TLM1 & 2	
26.	Bodies for the welfare OBC and women, Assignment -II / Quiz-II	1	26-10-2026		TLM1 & 2	
No. of classes required to complete UNIT-V: 04					No. of classes taken:	

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

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Unit-I, Unit-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):	30
Total Marks = CIE	30

ACADEMIC CALENDAR

Commencement of VII Semester Class Work	29-06-2026		
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	1W
II Phase of Instructions Contd..	26-10-2026	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
Commencement of VIII Semester Class Work	30 –11–2026		

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.
PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. D. Ratna Kishore	Dr. Ch. Rajendra Babu	Dr. G Rajendra	Dr. D. Ratna kishore
Signature				