DEPARTMENT

OF

COMPUTER SCIENCE & ENGINEERING (DS)

Lesson Plan

Session: Aug. –Dec., 2025

Semester: 7th

Name: _____

University Roll Number: _____

BUDDHA INSTITUTE OF TECHNOLOGY

CL-1 Sector - 7, GIDA, Gorakhpur - 273209 (U.P)

Phones: (0551) 2990413

Index

Timetable

Evaluation scheme

Subject 1 DEEP LEARNING (DL)

Subject 2 INTERNET OF THING (IOT)

Subject 3 SMART MANUFACTURING FOR INDUSTRY

PPC–M PLACEMENT PREPRATION CLASS (MATHS)

PSC PLACEMENT SUCCESS CLASS

Techedge (REACT JS)

Lab 1 DL LAB

TIME TABLE

BUDDHA INSTITUTE OF TECHNOLOGY, GIDA, GORAKHPUR
CLASS TIME TABLE (2025-26ODD SEMESTER)

DEPT.: CSE (DS)	w.e.f.: 04 AUGUST 2025	SEMESTER: 7C	ROOM NO: 416(Block-3)

Day / Time	9:10-10:05 AM	10:05-11:00 AM	SHORT BREAK (15 Min.)	11:15-12:10 PM	12:10-01:05PM	01:05-2:00 PM	LUNCH BREAK (45 Min.)	2:40-3:35 PM	3:35-4:30 PM
MON	SMI (SF)	DL (RS)		TECHEDGE-(C1+C2)-UC-L-306		IOT (KJ)			
TUES	PROJECT LAB (C1+C2) (SF) L-305			SMI (SF)	PLACEMENT SUCCESS CLASS (AKC)				
WED	SMI (SF)	HEC		TECHEDGE-(C1+C2)-UC-L-306		CSEP (KJ)			
THU	DL LAB (C1) (RS) L-301			IOT (KJ)	HEC	DL (RS)			
	INTERNSHIP LAB (C2) (SF) L-302								
FRI	DL LAB (C2) (RS) L-301			IOT (KJ)	FPC-MATHS (ST)	DL (RS)			
	INTERNSHIP LAB (C1) (SF) L-302								
SAT	DL (RS)	SMI (SF)		IOT (KJ)	FPC-MATHS (ST)				

	SUBJECT CODE	SUBJECT NAME	FACULTY NAME	LECTURE / WEEK
ACADEMICS	BAI 701	DEEP LEARNING (DL)	MR RANJEET SINGH (RS)	4
	BCS 070	INTERNET OF THING (IOT)	MR KRISHNA JAISWAL (KJ)	4
	BOE-080	SMART MANUFACTURING FOR INDUSTRY 4.0 (SMI)	MR. SOLAIM FAISAL (SF)	4
	BAI 751	DEEP LEARNING LAB (DL LAB)	MR RANJEET SINGH (RS)	2
	BCS 752	INTERNSHIP ASSESSMENT(INTERNSHIP)	MR. SOLAIM FAISAL (SF)	2
	BCS 753	PROJECT LAB	MR. SOLAIM FAISAL (SF)	2
	BCS 754	STARTUP & ENTREPRENEURIAL ACTIVITY	-	-
SKILL DEVELOPMENT	---	COMMUNICATION SKILL ENHANCEMENT PROGRAM(CSEP)	MR KRISHNA JAISWAL (KJ)	1
	---	TECH EDGE	MR. UJJAWAL CHAUDHARY (UC)	4
	---	HIGHER EDUCATION CELL (HEC)	-	2
	---	PLACEMENT PREPARATION CLASSES (FPC-MATHS)	MR SUDHAKAR TRIPATHI (ST)	2
PLACEMNENTS	---	PLACEMENT SUCCESS CLASSES(PSC)	MR ASHWANI KUMAR CHATURVEDI (AKC)	2
SELF-LEARNING	---	LIBRARY		-
			TOTAL	29

Dr SHASHANK SRIVASTAV
HOD

EVALUATION SCHEME

Subject Code	Subject	Sessional Marks	Exam Marks	Total Marks
THEORY SUBJECTS				
BAI 701	**DEEP LEARNING (DL)**	30	70	100
BCS 070	**INTERNET OF THING (IOT)**	30	70	100
BOE 080	**SMART MANUFACTURING FOR INDUSTRY**	30	70	100
PRACTICAL/DESIGN/DRAWING				
BAI 751	**DBMS LAB**	50	50	100

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING Allied (DS)

ACADEMIC YEAR 2025-26 (ODD Semester)

LESSON PLAN DETAILS

Semester: VII	Section: C	Course Code: BAI 701	Contact Hours /week**: 4**
Course Name: Deep Learning			# of credits: 3
Faculty name: Mr. Ranjeet Singh			Designation: Assistant Professor
Sessional Marks: 30		End Semester Examination Marks:70	University Exam Hours: 3

Prerequisites if any:
Machine Learning

Content delivery methods:	By Face to face delivery, Presentation, Tutorial etc.

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	INTRODUCTION : Introduction to machine learning- Linear models (SVMs and Perceptrons, logistic regression)- Intro to Neural Nets: What a shallow network computes- Training a network: loss functions, back propagation and stochastic gradient descent- Neural networks as universal function approximates.	**18**	**CO1**
2	DEEP NETWORKS : History of Deep Learning- A Probabilistic Theory of Deep Learning- Backpropagation and regularization, batch normalization- VC Dimension and Neural Nets-Deep Vs Shallow Networks- Convolutional Networks- Generative Adversarial Networks (GAN), Semi- supervised Learning.	13	**CO2**
3	DIMENTIONALITY REDUCTION 9 Linear (PCA, LDA) and manifolds, metric learning - Auto encoders and dimensionality reduction in networks - Introduction to Convnet - Architectures – AlexNet, VGG, Inception, ResNet - Training a Convnet: weights initialization, batch normalization, hyper parameter optimization.	14	**CO3**

4	OPTIMIZATION AND GENERALIZATION : Optimization in deep learning– Non-convex optimization for deep networks- Stochastic Optimization Generalization in neural networks- Spatial Transformer Networks- Recurrent networks, LSTM - Recurrent Neural Network Language Models- Word-Level RNNs & Deep Reinforcement Learning - Computational & Artificial Neuroscience .	11	**CO4**
5	CASE STUDY AND APPLICATIONS : Image net- Detection-Audio Wave Net-Natural Language Processing Word2Vec - Joint Detection-Bioinformatics- Face Recognition- Scene Understanding- Gathering Image Captions.	10	**CO5**

COURSE OUTCOMES: At the end of the Course, the Student will be able to:

CO1	Explain basic ML models and neural network training methods.
CO2	Analyze deep network architectures and learning techniques.
CO3	Apply dimensionality reduction and evaluate ConvNet architectures.
CO4	Implement optimization methods and advanced neural models (RNN, LSTM, RL).
CO5	Develop real-world applications using deep learning in vision, NLP, and bioinformatics.

Mapping of CO v/s PO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-
Average	-	-	-	-	-	-	-	-	-	-	-	-

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING Allied (DS)

ACADEMIC YEAR 2025-26 (ODD Semester)

Mapping of CO v/s PSO:

	PSO1	PSO2	PSO3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-
Average	-	-	-

Correlation levels: 1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Topics to be covered beyond syllabus	NA

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING Allied (DS)

ACADEMIC YEAR 2025-26 (ODD Semester)

LESSON PLAN

Lecture	Module	Scheduled				Conducted			
		Topic	*RBT Levels	C O Mapping	Date	Topic	Date	No. Of Students	Faculty Sign
1.	I	INTRODUCTION : Introduction to machine learning	L2	CO1					
2.		INTRODUCTION : Introduction to machine learning	,L2	CO1					
3.		INTRODUCTION : Introduction to machine learning	L2	CO1					
4.		INTRODUCTION : Introduction to machine learning	,L2	CO1					
5.		INTRODUCTION : Introduction to machine learning	L2	CO1					

6.		Linear models (SVMs and Perceptrons, logistic regression)-	L2	CO1					
7.		Linear models (SVMs and Perceptrons, logistic regression)-	,L2	CO1					
8.		Linear models (SVMs and Perceptrons, logistic regression)-	L2	CO1					
9.		Tutorial-1 Unit-1	-	-					
10.		Intro to Neural Nets: What a shallow network computes-	L2	CO1					
11.		Training a network	L2	CO1					
12.		Training a network	,L2	CO1					
13.		loss functions,	L2	CO1					
14.		back propagation and stochastic gradient descent-	,L2	CO1					
15.		back propagation and stochastic	L2	CO1					

		gradient descent-							
16.		Neural networks as universal function approximates.	,L2	CO1					
17.		Neural networks as universal function approximates.	L2	CO1					
18.		Tutorial-2 Unit-1	-	-					
19.	II	DEEP NETWORKS : History of Deep Learning	L2	CO2					
20.		DEEP NETWORKS : History of Deep Learning	L2	CO2					
21.		A Probabilistic Theory of Deep Learning	L2	CO2					
22.		Backpropagation and regularization,	L2	CO2					
23.		Backpropagation and regularization,	L2	CO2					
24.		Batch normalization	L2	CO2					

25.		Tutorial-3 Unit-2	L2	CO2					
26.		VC Dimension and Neural Nets	L2	CO2					
27.		Deep Vs Shallow Networks	L2	CO2					
28.		Convolutional Networks	L2	CO2					
29.		Generative Adversarial Networks (GAN)	L2	CO2					
30.		Semi- supervised Learning	L2	CO2					
31.		Tutorial-4 Unit-2	L2	CO2					
32.		DIMENTIONALITY REDUCTION	L2	CO3					
33.		Linear (PCA, LDA)	L2	CO3					
34.		Linear (PCA, LDA)	L2	CO3					
35.		Manifolds, metric learning	L2	CO3					
36.		Auto encoders and dimensionality reduction in	L2	CO3					

	III	networks							
37.		Tutorial-5 Unit-3	L2	CO3					
38.		Auto encoders and dimensionality reduction in networks	L2	CO3					
39.		Introduction to Convnet - Architectures	L2	CO3					
40.		AlexNet, VGG	L2	CO3					
41.		Inception, ResNet	L2	CO3					
42.		Training a Convnet: weights initialization	L2	CO3					
43.		batch normalization	L2	CO3					
44.		hyper parameter optimization.	L2	CO3					
45.		Tutorial-6 Unit-3	L2	CO3					

46.	IV	OPTIMIZATION AND GENERALIZATION : Optimization in deep learning	L2	CO4					
47.		OPTIMIZATION AND GENERALIZATION : Optimization in deep learning	L2	CO4					
48.		Non-convex optimization for deep networks	L2	CO4					
49.		Stochastic Optimization Generalization in neural networks	L2	CO4					
50.		Spatial Transformer Networks- Recurrent networks	L2	CO4					
51.		Tutorial-7 Unit-4	-	-					
52.		LSTM - Recurrent Neural Network	L2	CO4					
53.		Language Models- Word-Level RNNs	L2	CO4					
54.		Deep Reinforcement Learning - Computational	L2	CO4					

55.		Artificial Neuroscience	L2	CO4					
56.		Tutorial-8 Unit-4	L2	CO4					
57.	V	CASE STUDY AND APPLICATIONS	L3	CO5					
58.		Image net- Detection-	L3	CO5					
59.		Audio Wave Net	L3	CO5					
60.		Natural Language Processing	L3	CO5					
61.		Tutorial-9 Unit-5	L3	CO5					
62.		Word2Vec - Joint Detection	L3	CO5					
63.		Bioinformatics- Face Recognition	L3	CO5					
64.		- Scene Understanding- Gathering Image Captions	L3	CO5					
65.		- Scene Understanding- Gathering Image Captions	L3	CO5					

66.		Tutorial-9 Unit-10	L3	CO5					

Class Test	Syllabus
CT-01	Class 1-Class 22
CT-02	Class 23-Class 41
PRE-AKTU	Full Syllabus

***Revised Bloom's Taxonomy (RBT) Levels:**

L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

TextBooks:

T1. Michael Nielsen, Neural Networks and Deep Learning, Determination Press, 2015.

T2. Ian Goodfellow, Yoshua Bengio, Aaron Courville, Deep Learning, MIT Press, 2016.

Faculty Sign **HOD's Sign**

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING Allied (DS)

ACADEMIC YEAR 2025-26 (ODD Semester)

LESSON PLAN DETAILS

Semester: VII	Section: C	Course Code: BCS070	Contact Hours /week**: 4**
Course Name:Internet of Things			# of credits: 3
Faculty name:Mr. Krishna Jaiswal			Designation: AssistantProfessor
Sessional Marks:30		End Semester Examination Marks:70	University Exam Hours: 3

Prerequisites if any:
Computer Networks, cloud computing

Content delivery methods:	By Face to face delivery, Presentation, Tutorial etc.

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	**Internet of Things (IoT):** Vision, Definition, Conceptual Framework, Architectural view, technology behind IoT, Sources of the IoT, M2M Communication, IoT Examples. Design Principles for Connected Devices: IoT/M2M systems layers and design standardization, communication technologies, data enrichment and consolidation, ease of designing and affordability	**15**	**CO1**
2	**Hardware for IoT:** Sensors, Digital sensors, actuators, radio frequency identification (RFID) technology, wireless sensor networks, participatory sensing technology. Embedded Platforms for IoT: Embedded computing basics, Overview of IOT supported Hardware platforms such as Arduino, NetArduino, Raspberry pi, Beagle Bone, Intel Galileo boards and ARM cortex.	**15**	**CO2**
3	**Network & Communication aspects in IoT:** Wireless Medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination	**10**	**CO3**

4	**Programming the Ardunio:**Ardunio Platform Boards Anatomy, Ardunio IDE, coding, using emulator, using libraries, additionsinardunio, programming the ardunio for IoT.	**10**	**CO4**
5	**Challenges in IoT Design challenges:** Development Challenges, Security Challenges, Other challenges IoT Applications: Smart Metering, E-health, City Automation, Automotive Applications, home automation, smart cards, communicating data with H/W units, mobiles, tablets, Designing of smart street lights in smart city.	**10**	**CO5**

COURSE OUTCOMES: At the end of the Course, the Student will be able to:

CO1	Demonstrate basic concepts, principles and challenges in IoT.
CO2	Illustrate functioning of hardware devices and sensors used for IoT.
CO3	Analyze network communication aspects and protocols used in IoT.
CO4	Apply IoT for developing real life applications using Ardunio programming.
CO5	To develop IoT infrastructure for popular applications.

Mapping of CO v/s PO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-
Average	-	-	-	-	-	-	-	-	-	-	-	-

Mapping of CO v/s PSO:

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING Allied (DS)

ACADEMIC YEAR 2025-26 (ODD Semester)

	PSO1	PSO2	PSO3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-
Average	-	-	-

Correlation levels: 1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Topics to be covered beyond syllabus	,Types of Network , Topology, Networking Devices.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING Allied (DS)

ACADEMIC YEAR 2025-26 (ODD Semester)

LESSON PLAN

Lecture	Module	Scheduled				Conducted			
		Topic	*RBT Levels	C O Mapping	Date	Topic	Date	No. Of Students	Faculty Sign
1.	I	Vision of IoT	L2	CO1					
2.		Definition & Conceptual Framework	L2	CO1					
3.		Architectural View of IoT	L2	CO1					
4.		Technology Behind IoT	L2	CO1					
5.		Sources of IoT	L2	CO1					
6.		M2M Communication	L2	CO1					
7.		IoT Examples	L2	CO1					
8.		IoT/M2M System Layers	L2	CO1					
9.		Design Standardization	L2	CO1					

10.		Tutorial 1 – Unit I	-	-					
11.		Communication Technologies in IoT	L2	CO1					
12.		Data Enrichment & Consolidation	L2	CO1					
13.		Ease of Designing & Affordability	L2	CO1					
14.		Unit I Revision & Discussion	L2	CO1					
15.		Tutorial 2 – Unit I	-	-					
16.	II	Sensors	L2	CO2					
17.		Digital Sensors	L2	CO2					
18.		Actuators	L2	CO2					
19.		RFID Technology	L2	CO2					
20.		Wireless Sensor Networks	L2	CO2					
21.		Participatory Sensing Technology	L2	CO2					
22.		Embedded Computing Basics	L2	CO2					

23.		Arduino Platform Overview	L3	CO2					
24.		NetArduino Overview	L3	CO2					
25.		Tutorial 1 – Unit II	L3	CO2					
26.		Raspberry Pi Overview	L3	CO2					
27.		BeagleBone Overview	L3	CO2					
28.		Intel Galileo Boards Overview	L3	CO2					
29.		ARM Cortex Overview	L3	CO2					
30.		Tutorial 2 – Unit II	-	-					
31.	III	Wireless Medium Access Issues	L4	CO3					
32.		MAC Protocol Survey	L4	CO3					
33.		Routing Protocols in IoT	L4	CO3					
34.		Sensor Deployment	L4	CO3					
35.		Node Discovery	L4	CO3					

36.		Tutorial 1 – Unit III	-	-					
37.		Data Aggregation	L4	CO3					
38.		Data Dissemination	L4	CO3					
39.		Integration of Networking Aspects	L4	CO3					
40.		Tutorial 2 – Unit III	-	-					
41.	IV	Arduino Board Anatomy	L3	CO4					
42.		Arduino IDE	L3	CO4					
43.		Coding Basics in Arduino	L3	CO4					
44.		Using Arduino Emulator	L3	CO4					
45.		Arduino Libraries	L3	CO4					
46.		Tutorial 1 – Unit IV	-	-					
47.		Additions in Arduino	L3	CO4					
48.		Programming Arduino for IoT	L3	CO4					

49.		Example: Sensor Data Collection	L3	CO4					
50.		Tutorial 2 – Unit IV	-	-					
51.	V	Development Challenges	L3	CO5					
52.		Security Challenges	L3	CO5					
53.		Other IoT Challenges	L3	CO5					
54.		Smart Metering	L3	CO5					
55.		Tutorial 1 – Unit V	-	-					
56.		E-Health Applications	L3	CO5					
57.		City Automation	L3	CO5					
58.		Automotive Applications	L3	CO5					
59.		Home Automation & Smart Cards	L3	CO5					
60.		Tutorial 2 – Unit V	-	-					

Class Test	Syllabus
CT-01	Class 1-Class 21
CT-02	Class 22-Class 42
PRE-AKTU	Full Syllabus

***Revised Bloom's Taxonomy (RBT) Levels:**
L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

TextBooks:

T1. Michael Miller "The Internet of Things" by Pearson, 2015.

T2. Raj Kamal, "Internet of Things: Architecture and Design Principles", McGraw-Hill, 2nd Edition, 2017

Faculty Sign **HOD's Sign**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING-DS

ACADEMIC YEAR 2025-26 (ODD Semester)

LESSON PLAN

Semester: VII	Section: C	Course Code: BOE080	Contact Hours /week**: 4**
Course name: Smart Manufacturing for Industry 4.0			# of credits:3
Teacher's name: **Mr. Solaim Faisal**			Designation: Assistant Professor
Sessional Marks:30	End Semester Examination Marks: 70		University Exam Hours: 3

Prerequisites if any:			
Course Code	**Course Name**	**Topic/s**	**Semester**

Content delivery by using	Chalk/Marker and Board, PPT and Video Lectures

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	**Industry 4.0:** Concept, Globalization and emerging issues, The Fourth Revolution, LEAN manufacturing, Smart and connected business perspectives, Smart factories.	**8**	**CO1**
2	Automation: Programable Logic Controller (PLC) and its Programming software, Communication of different devices with PLC, Sensor, Smart Sensor, HMI design, Cyber Physical System – key components, ISA-95 architecture, CPS-5C architecture, Concept of Digit Twin	**8**	**CO2**
3	**Communication:** Protocols-MQTT, OPC UA, EtherNet/IP, Profinet, EtherCAT, etc; MQTT- History, MQTT broker, Message types, Quality of Service (QoS), Application; OPC UA-History, Specification, Client, Server, Programming with -Free and open-source software, Propriety software; Augmented Reality	**8**	**CO3**
4	**IoT Platform:** Data Modelling, IoT Platforms-Thing, basic functionalities, Abstract definition of Thing, Networks, etc; IoT Gateway, Machine Interfaces-Cloud-based Mosquitto brokers, Programming with – Free and open-source software, Propriety software	**8**	**CO4**
5	**Machine Learning Foundation:** Learning algorithms - Supervised, Unsupervised, Self learning, Feature learning, etc. Models Artificial Neural Networks, Decision trees, Regression analysis, Genetic algorithms, etc.; Programming with – Free and open-source software, Propriety software	**8**	**CO5**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING-DS

ACADEMIC YEAR 2025-26 (ODD Semester)

COURSE OUTCOMES: At the end of the Course, the Student will be able to:

CO1	Introduce concept of Industry 4.0 for Smart Manufacturing.
CO2	Understand use various hardware used in Smart Manufacturing
CO3	Understand need of various communication protocols. hardware and software, IoT Layers and their relative importance.
CO4	Understand could-computing IoT platform for Smart Manufacturing.
CO5	Understand machine learning to make smart factories.

Mapping of CO v/s PO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-
Average	-	-	-	-	-	-	-	-	-	-	-	-

	PSO1	PSO2	PSO3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-
Average	-	-	-

Correlation levels: **1-Slight (Low)** **2-Moderate (Medium)** **3-Substantial (High)**

Gap in the syllabus	NA

Topics to be covered beyond syllabus	Cyber Security, Longest Common Subsequence & Matrix Chain Multiplications

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING-DS

ACADEMIC YEAR 2025-26 (ODD Semester)

LESSON PLAN

Lecture #	Module#	Topics	*RBT Levels	Course Outcome Mapping	Planned Date	Actual Date	Faculty Sign	Remarks
1	I	Introduction to industry 4.0	L1	CO1				
2		Globalization and emerging issues in manufacturing	L1					
3		Fourth industrial revolution key changes	L1					
4		LEAN manufacturing principles	L1					
5		Smart and connected business perspectives	L1					
6		Smart factory Architecture	L1					
7		Recap + Quiz						
8	II	Introduction to automation in manufacturing	L1	CO2				
9		PLC- Basics, types, and application	L1					
10		PLC programming languages (Ladder, FBD)	L1					
11		Hands-on: Basic ladder logic instructions (start/stop, latch, unlatch)	L2					
12		Timer and counter programming in PLC	L2					
13		Hands-on: Timer/counter examples	L2					
14		Sensors in automation-types and selection	L2					
15		Smart sensors – working and benfits	L2					

16		Communication of devices with PLC	L2					
17		HMI design principles	L2					
18		Cyber- Physical System	L2					
19		ISA-95 architecture	L2					
20		CPS-5C architecture	L2					
21		Digital Twin – concept, benefits, and examples	L2					
22		PLC mini-project demo & review	L2					
23	III	Introduction to industrial communication protocols	L1	CO3				
24		MQTT-history, feature, architecture	L1					
25		MQTT- message types, QoS, applications	L2					
26		OPC UA – history & specifications	L1					
27		OPC UA – client server communication	L2					
28		EtherNet/IP- basic and industrial use cases	L2					
29		Profinet-overview & comparison with others	L2					
30		EtherCAT – working & advantages	L2					
31		Programming MQTT with open source tools	L2					
32		Proprietary software for industrial communication	L2					
33		Augmented reality in manufacturing	L2					
34		Recap + protocol comparison	L2					
35		Data modelling for IoT	L1					

36	IV	Introduction to IoT platforms	L1	CO4				
37		Abstract definition of "thing" in IoT	L1					
38		Networks and connectivity in IoT	L1					
39		IoT Gateways & their role	L1					
40		Machine interfaces – cloud-based Mosquito brokers	L2					
41		IoT programming with open-source tools	L2					
42		Proprietary IoT software	L2					
43		Machine interfaces & cloud brokers	L2					
44		Unit IV review	L2					
45	V	Introduction to ML in smart factories	L1	CO5				
46		Supervised learning algorithms	L1					
47		Unsupervised and self-learning technique	L1					
48		Feature learning – role in IoT data	L2					
49		Artificial Neural Networks – basics and applications	L2					
50		Decision trees, regression analysis in industry	L2					
51		Genetic algorithms	L2					
52		Programming ML models	L2					
53		Revision						
54		Revision						
55		Revision						

***Revised Bloom's Taxonomy (RBT) Levels:**
L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

References:

Text books :(As per University / Board syllabus)

T1. Christoph Jan Bartodziej, "The Concept Industry 4.0 – An Empirical Analysis of Technologies and Application in Production Logistics".

T2. Alasdair Gilchrist, "Industry 4.0 – The Industrial Internet of Thigs".

T3. Daniel Minoli, "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications".

Faculty Sign **HOD's Sign**

SKILL DEVELOPMENT CELL

Lesson Plan

Course-PPC(MATHS)
College-BIT
Department-D.S.
Class/Section-4th year
Faculty- Sudhaker Tripathi

Lecture#	Scheduled Topics	Conducted			
		Date	No Of Students	Faculty Sign	Topic
1	MOCK TEST-1				
2	SOLUTION OF MOCK TEST - 1				
3	MOCK TEST-2				
4	SOLUTION OF MOCK TEST - 2				
5	MOCK TEST-3				
6	SOLUTION OF MOCK TEST - 3				
7	MOCK TEST-4				
8	SOLUTION OF MOCK TEST - 4				

9	MOCK TEST-5				
10	SOLUTION OF MOCK TEST - 5				
11	MOCK TEST-6				
12	SOLUTION OF MOCK TEST - 6				
13	MOCK TEST-7				
14	SOLUTION OF MOCK TEST - 7				
15	MOCK TEST-8				
16	SOLUTION OF MOCK TEST - 8				
17	MOCK TEST-9				
18	SOLUTION OF MOCK TEST - 9				
19	MOCK TEST-10				
20	SOLUTION OF MOCK TEST - 10				

Faculty/ Trainer Sign: