VELAMMAL
INSTITUTE OF TECHNOLOGY

Approved by AICTE New Delhi, Affiliated to Anna University Chennai
CSE, ECE, EEE, IT, MECH Accrediated by NBA, NAAC
"Velammal Knowledge Park", Chennai - Kolkatta Highway, Ponneri - 601 204

Value Added Course

On

Industrial Automation

ORGANIZED BY

Department of Mechatronics Engineering

VELAMMAL INSTITUTE OF TECHNOLOGY

DEPARTMENT OF MECHATRONICS ENGINEERING

In associate with

UNIVERSALTECH AUTOMATION

Event Report 2023 – 2024 ODD SEMESTER

Title of the Event	:	**Value Added Course on Industrial Automation**
Resource Persons	:	**Mr. G. Muthukrishnan** Managing Director UniversalTech Automation **Mr. R. Ohmsakthi vel** AP/Mechatronics Engineering Velammal Institute of Technology
Date	:	17.07.2023 to 22.07.2023
Session Type	:	In Campus
Venue	:	Mechatronics Seminar Hall, IIIrd Floor, Velammal Institute of Technology
Event Coordinator	:	**Dr. V. Ramasamy,** AP/MTS
Convener	:	**Dr. D. Magesh Babu,** HoD/MTS

Report on

Value Added Course on “Industrial Automation”

Department of Mechatronics Engineering, Velammal Institute of Technology in association with UniversalTech Automation organized a Value Added Course on Industrial Automation for six day (17.07.2023 to 22.07.2023) for III Year and IV Year Mechatronics Engineering Students.

On that day, Dr. D. Magesh Babu, Professor and Head, Department of Mechatronics Engineering welcomed the gatherings with inspiration thoughts in google meet. In his talk, he stressed the importance of value added course and it impacts over the students’ career.

A person, who always stand with students and motivates them, our principal Dr. N. Balaji delivers the inaugural address. In his address, he expressed his perspective over the latest trend and technologies opted for industrial automation.

The Instructor Mr. R. Ohmsakthi vel delivered the presentation effectively with more interactive session. Through out the session, he delivers lecture series and Hands-on session on Introduction to industrial automation, PLC basics, PLC programming, Various brands of PLC, SCADA, DCS and finally ended with the career opportunities of Mechatronics engineering students in the field of industrial automation. in this course, students were more interactive and gained the knowledge in industrial automation.

On 24.07.2023 Mr. G. Muthukrishnan, Managing Director, UniversalTech Automation finally evaluated the students’ performance and certified the students with certificates.

ANNEXURE – I

Brochure and Schedule

Schedule

DATE	1 (8.30 am - 9.20 am)	2 (9.20 am - 10.10 am)	3 (10.20 am - 11.10 am)	4 (11.10 am - 12.00 pm)	5 (12.50 pm - 1.30 pm)	6 (1.30 pm - 2.20 pm)	7 (2.10 pm - 3.10 pm)
17-07-2023	Inaugural Session	Introduction to Industrial Automation (Basic and Components)			Programmable Logic Controllers (PLCs) - Architecture and Hardware Components		
18-07-2023	PLC Programming (Types and Structures)				Hands on Training on PLC Programming (LD, FBD, ST, SFC) for basic gates		Assessment - I
19-07-2023	Ladder Programming (Data handling, Timer/Counter)				Hands on Training on PLC Programming (Data handling, Timer/Counter)		
20-07-2023	Interfacing (Sensors, Motors)				Hands on Training on PLC Programming for interfacing		Assessment - II
21-07-2023	PLC based Real Time Applications				Development of Program for Real time applications		
22-07-2023	SCADA and DCS Basics				Development of Program for Real time applications		Assessment – III

ANNEXURE – II

Syllabus and Assessment Structure

MTVAC004	INDUSTRIAL AUTOMATION	L	T	P	C
		2	0	3	2

OBJECTIVES:

- To inculcate sound understanding of industrial automation among students.
- To impart the knowledge on the basic concepts, programming and interfacing of PLC as a member in industrial automation.

Module I Introduction 10

Industrial Automation: Structure & Types – PLC – HMI – SCADA – DCS. **Programmable Logic Controllers (PLC):** Architecture – Sensors – Actuators – Switches – Communication.

Module 2 PLC Programming and Interfacing 15

PLC Programming: Types – Programming devices – Basics of LD, FBD, ST, SFC. **Ladder Diagram (LD):** Relay Ladder Diagram – Ladder Logic Diagram – Data Handling – I/O programming – Timer programming – Counter programming – Data Manipulation – Instruction sets. **Interfacing:** Sensor interfacing – ADC/DAC interfacing – Actuator interfacing

Module 3 Applications 15

Direction control of motor – Automatic car parking system – bottle filling and capping station – Home automation – Automatic street light control – Traffic light control system – Railway gate automation – Material handling system – Variable Frequency Drives

TOTAL: 40 hours

COURSE OUTCOMES

Upon successful completion of the course, students should be able to

- State the basic concepts and terminologies of industrial automation.
- Develop the PLC program for real time applications.
- Test the simulated output by constructing the PLC program using suitable instruction set.
- Establish the effective communication between PLC and Peripherals.

Mapping of COs with POs												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	0	3	3	0	0	0	1	0	0	1
CO2	0	2	3	3	3	0	0	0	1	0	0	1
CO3	0	2	3	3	3	0	0	0	1	0	0	1
CO4	0	2	3	3	3	0	0	0	1	0	0	1
AVG	2	2	3	3	3	0	0	0	1	0	0	1

TEXT BOOKS:

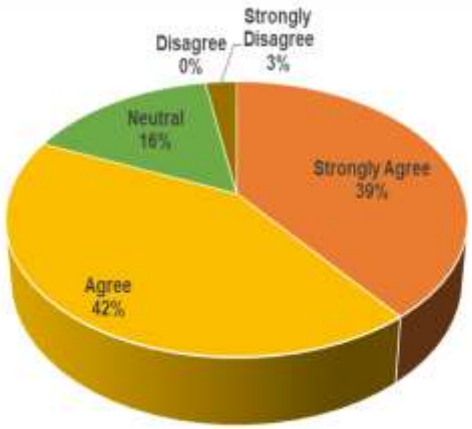
1. Frank D, Petruzella, “Programmable Logic Controller” McGraw – Hill Publications, Fourth Edition, 2016.
2. Gary Dunning, “Introduction to Programmable Logic Controllers”,3rd India edition, Cengage Learning, 2007
3. Michael P. Lukas, Distributed Control Systems: Their Evaluation and Design, Van Nostrand Reinhold Co., 1986.
4. Krishna Kant “Computer Based Process Control”, Prentice Hall of India, 2004.

ANNEXURE – III

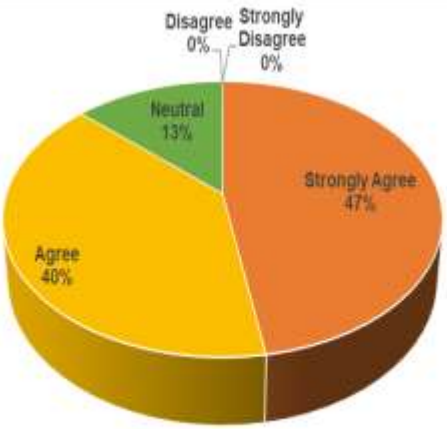
Participants' Feedback Analysis

Students' feedback count on each question

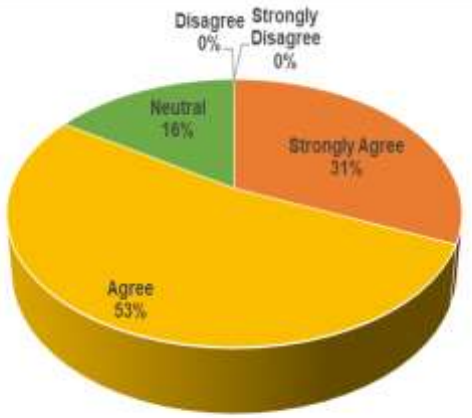
(5 – Strongly agree, 4 – Agree, 3 – Neutral, 2 – Disagree, 1 – Strongly disagree)						
No	**Question**	**5**	**4**	**3**	**2**	**1**
Q 1	The course content meets with your expectation	15	16	6	0	1
Q 2	The lecture sequence was well planned	18	15	5	0	0
Q 3	The contents are illustrated with	12	20	6	0	0
Q 4	The level of course was	11	19	7	0	1
Q 5	The course contents compared with your expectations	7	15	14	1	1
Q 6	The course exposed you to new knowledge and practices	14	17	6	0	1
Q 7	Will you recommend this course to your friends	17	16	5	0	0
Q 8	The lectures were easy and clear to understand	15	16	6	0	1
Q 9	The teaching aids were effectively used	15	19	4	0	0
Q 10	The course material handed out was adequate	10	15	12	1	0
Q 11	The instructors encouraged interaction and were helpful	15	14	9	0	0
	(Y – Yes, N – No)					
No	**Question**	**Y**	**N**			
Q 12	Were the objectives of the course clear to you?	37	1			
Q 13	Were objectives of the course realized?	38	0			
(5 – Excellent, 4 – Very Good, 3 – Good, 2 – Fair, 1 – Poor)						
No	**Question**	**5**	**4**	**3**	**2**	**1**
Q 14	Please give overall ratings of the course	11	18	7	2	0
Q 15	Please give overall ratings of the instructor	18	15	4	1	0
Q 16	Please give overall ratings of the facility and resources	10	22	5	1	0



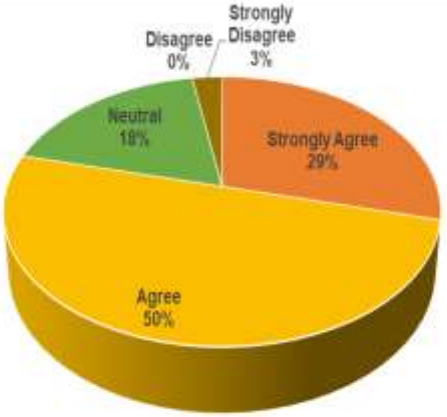
The course content meets with your expectation



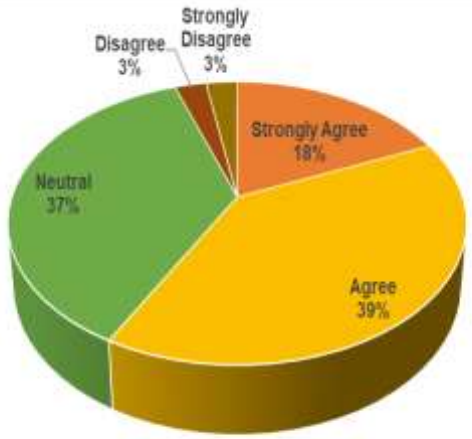
The lecture sequence was well planned



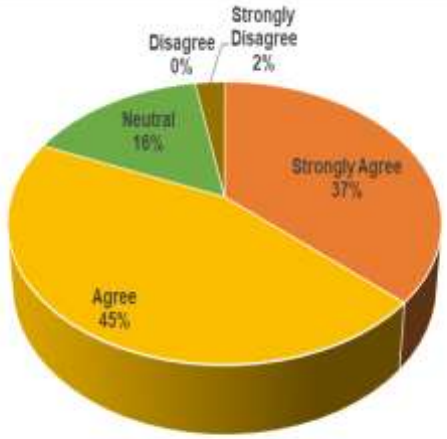
The contents are illustrated with



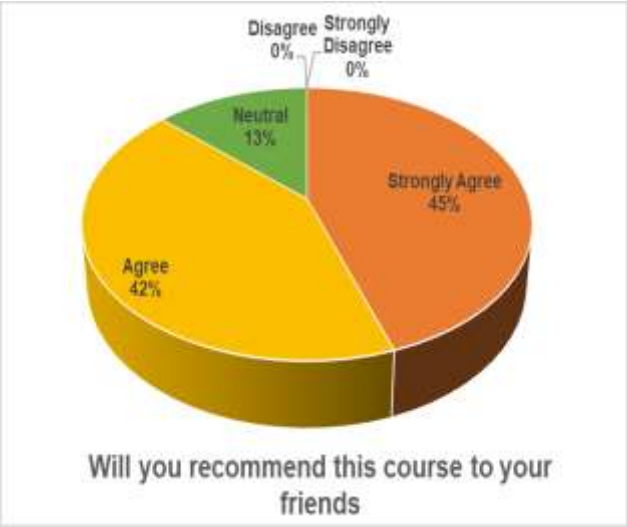
The level of course was



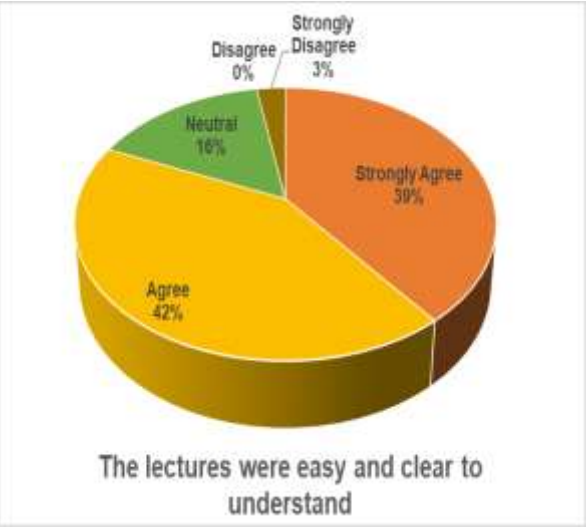
The course contents compared with your expectations



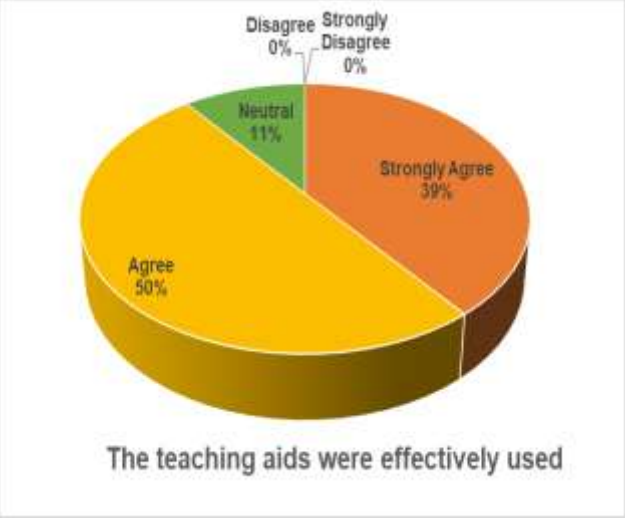
The course exposed you to new knowledge and practices



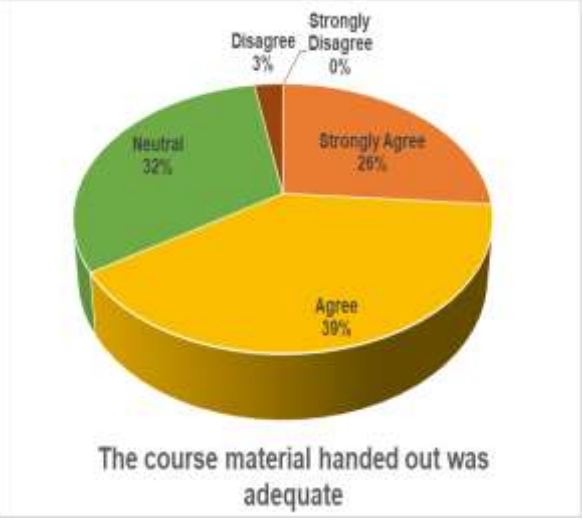
Will you recommend this course to your friends



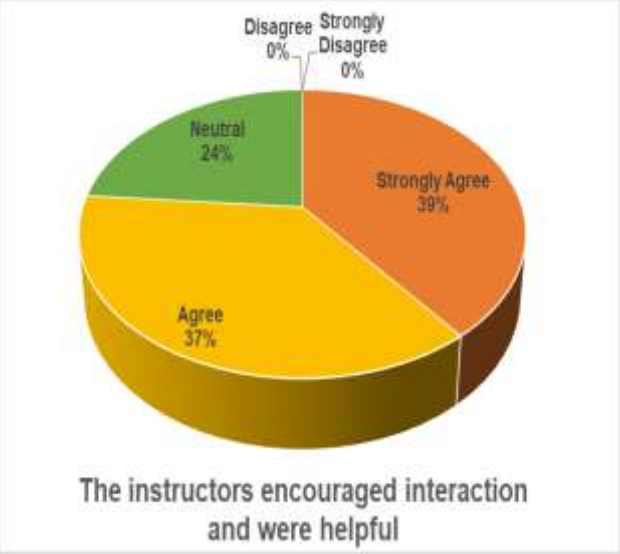
The lectures were easy and clear to understand



The teaching aids were effectively used

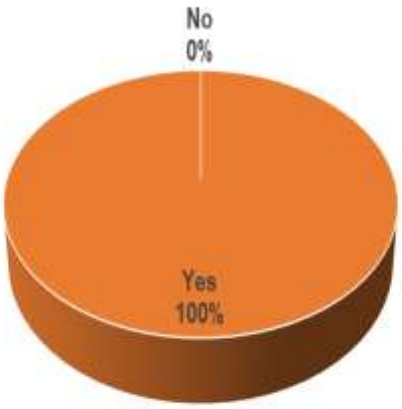


The course material handed out was adequate

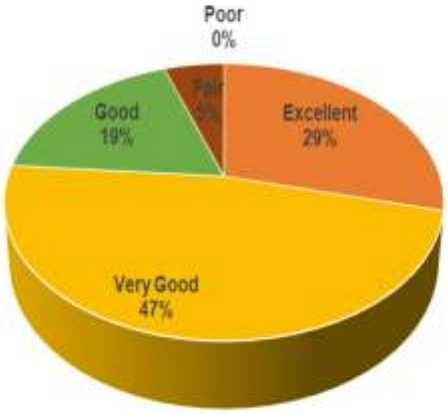


The instructors encouraged interaction and were helpful

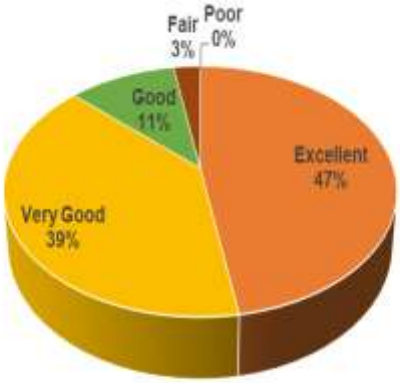
Were the objectives of the course clear to you?



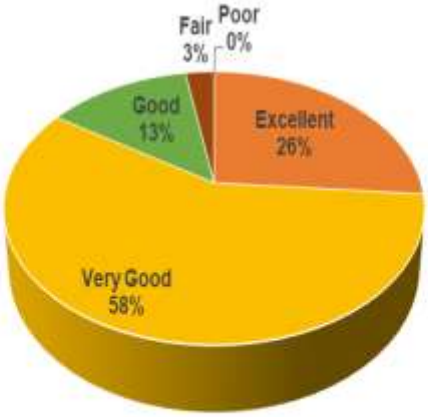
Were objectives of the course realized?



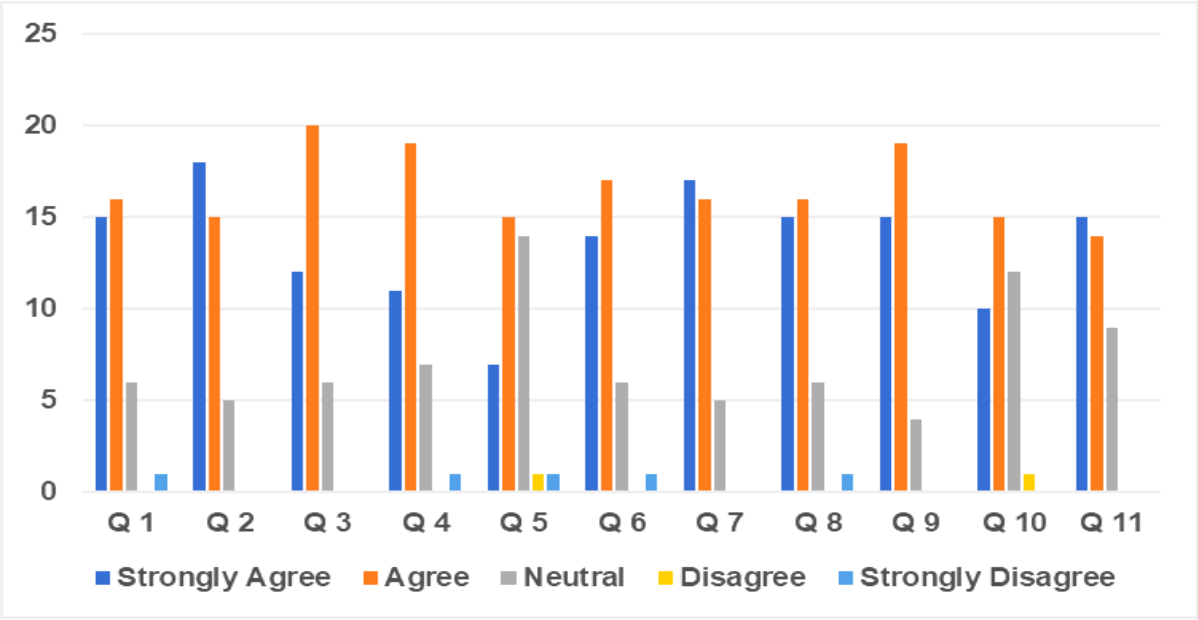
Please give overall ratings of the course

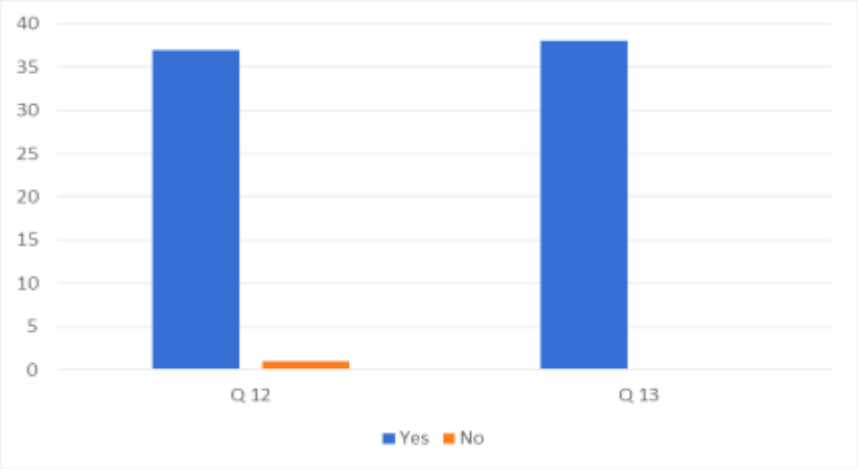


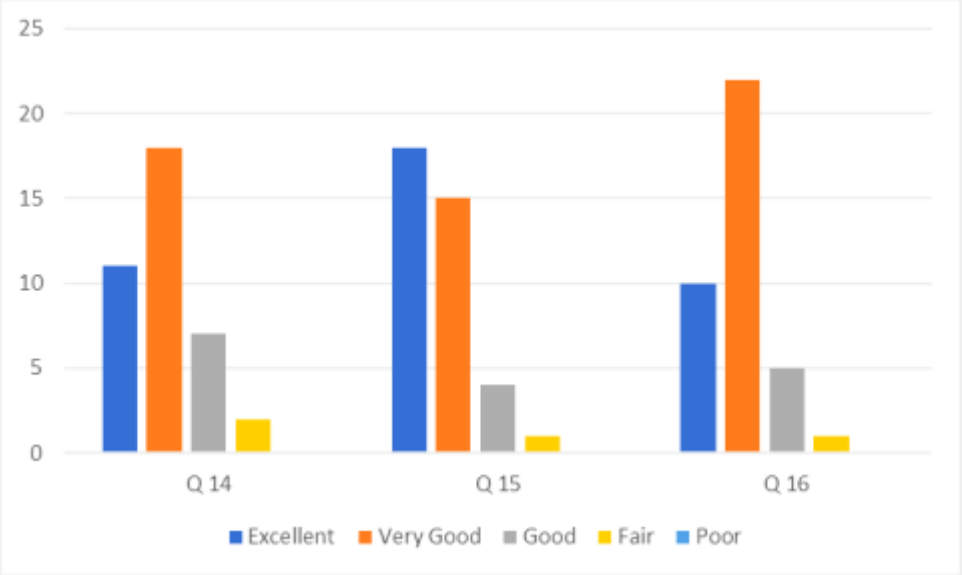
Please give overall ratings of the instructor



Please give overall ratings of the facility and resources


25
20
15
10
5
0
Q 1
Q 2
Q 3
Q 4
Q 5
Q 6
Q 7
Q 8
Q 9
Q 10
Q 11
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree


40
35
30
25
20
15
10
5
0
Q 12
Q 13
Yes
No


25
20
15
10
5
0
Q 14
Q 15
Q 16
Excellent
Very Good
Good
Fair
Poor

A total of 38 students from Department of Mechatronics engineering were given their feedback for Value Added Course on “Industrial Automation”. Most of the students were satisfied by overall quality of content as well as the instructor as well as the course content. Few students think that there is chance for the improvement in facility and resources to enrich knowledge, encouraging students for higher studies, to undergo internship programs and training for the students.

Major Suggestions and Action taken

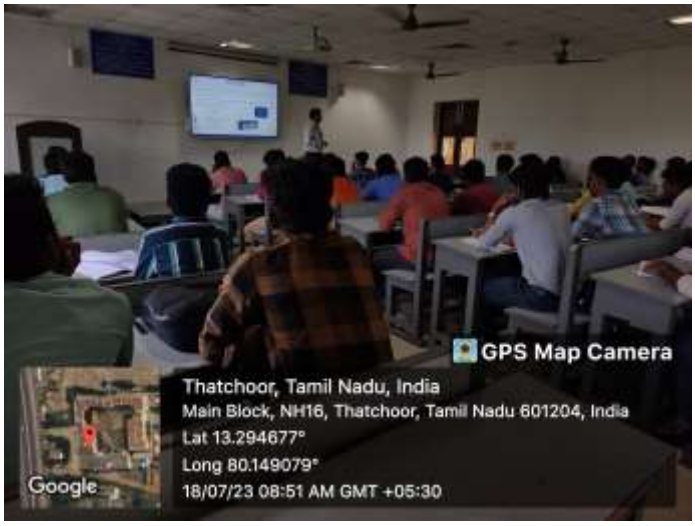
Sl. No	Major Suggestions	Action taken
1.	Students pointed that they need more hardware hands-on session.	A proposal has submitted to UniversalTech Automation to conduct skill development program in the field of industrial automation to students for a week in their training Centre
2.	Students mentioned that duration of course is not enough to practice all concepts.	The department team members discussed and decided to conduct the value added course in three different modules with extended duration of 60 hours for each module.

ANNEXURE – V

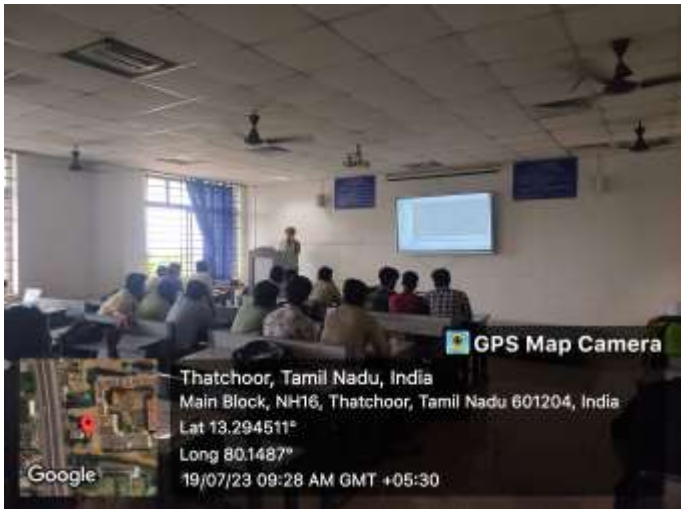
Photographs Certificates

Day 1 (17.07.2023)

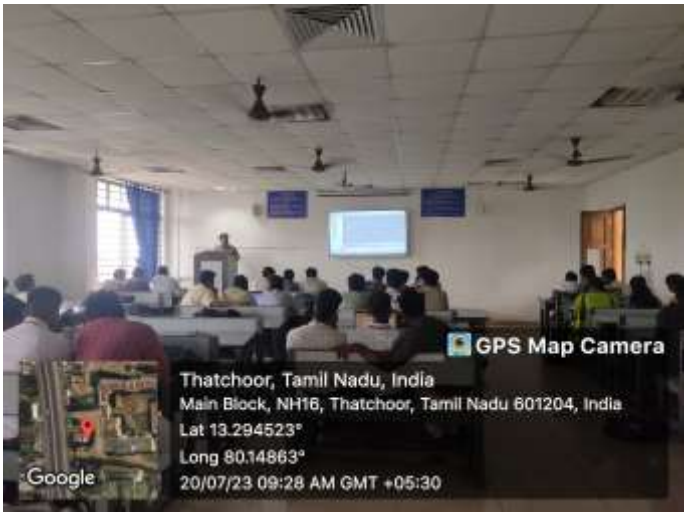
Day 2 (18.07.2023)



Day 3 (19.07.2023)

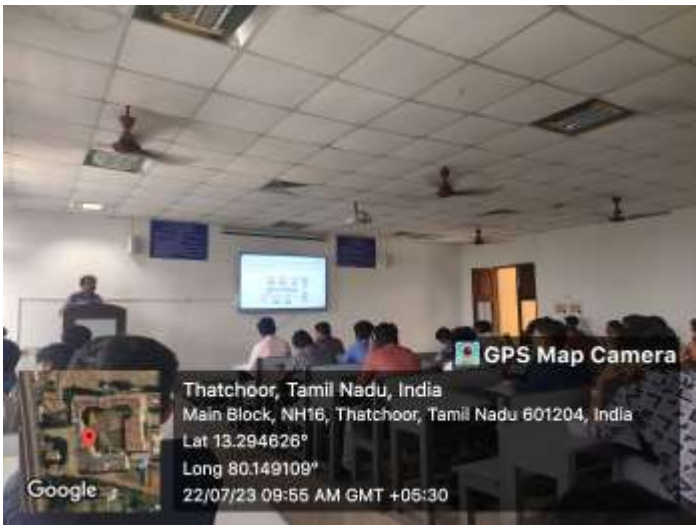


Day 4 (20.07.2023)

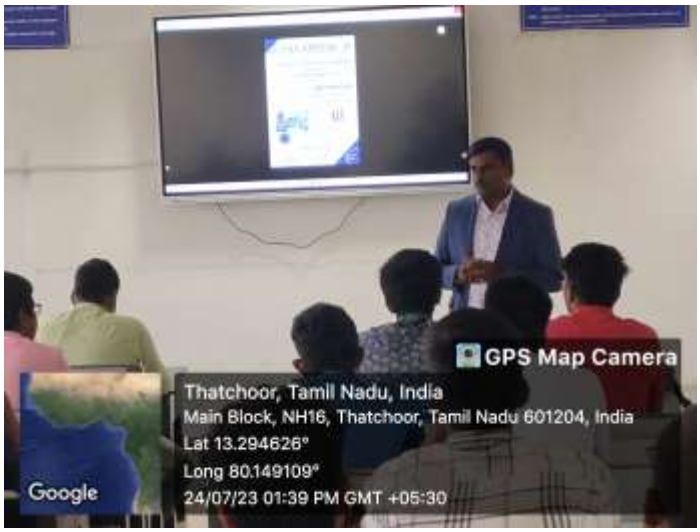


Day 5 (21.07.2023)

Day 6 (22.07.2023)



Interaction and Final Assessment (24.07.2023)



Sample Certificates

Velammal Institute of Technology

Velammal Knowledge Park, Panchetti, Thiruvallur - 601204

VELAMMAL INSTITUTE OF TECHNOLOGY

in association with

UniversalTech Automation

Vilankurichi, Coimbatore - 641035

CERTIFICATE

OF COMPLETION

This certificate is awarded to

VISHNU V

Congradulations, for your sucessful completion of the Value Added Course on "Industrial Automation" from 17.07.2023 to 22.07.2023 (40 Hours) organised by the Department of Mechatronics Engineering, Velammal Institute of Technology in association with UniversalTech Automation with a consolidated score of 94% and the grade letter is recorded as O - Outstanding

Attendance Percentage	100%	Internal Assessment	46/50	External Assessment	48/50

Dr. D. Magesh Babu, HOD/Mechatronics Engg., Velammal Institute of Technology

Mr. G. Muthukrishnan, Managing Director, UniversalTech Automation

Dr. S. Soundararajan, Vice - Principal, Velammal Institute of Technology

Dr. N. Balaji, Principal, Velammal Institute of Technology

O - Outstanding (86% - 100%); A - Good (71% - 85%); B - Average (51% - 70%); C - Not Satisfactory (<50%)

Velammal Institute of Technology

Velammal Knowledge Park, Panchetti, Thiruvallur - 601204

VELAMMAL INSTITUTE OF TECHNOLOGY

in association with

UniversalTech Automation

Vilankurichi, Coimbatore - 641035

CERTIFICATE

OF COMPLETION

This certificate is awarded to

PRAKASH R S

Congradulations, for your sucessful completion of the Value Added Course on "Industrial Automation" from 17.07.2023 to 22.07.2023 (40 Hours) organised by the Department of Mechatronics Engineering, Velammal Institute of Technology in association with UniversalTech Automation with a consolidated score of 86% and the grade letter is recorded as O - Outstanding

Attendance Percentage	100%	Internal Assessment	42/50	External Assessment	44/50

Dr. D. Magesh Babu, HOD/Mechatronics Engg., Velammal Institute of Technology

Mr. G. Muthukrishnan, Managing Director, UniversalTech Automation

Dr. S. Soundararajan, Vice - Principal, Velammal Institute of Technology

Dr. N. Balaji, Principal, Velammal Institute of Technology

O - Outstanding (86% - 100%); A - Good (71% - 85%); B - Average (51% - 70%); C - Not Satisfactory (<50%)