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VIMAL JYOTHI ENGINEERING COLLEGE

JYOTHI NAGAR, CHEMPERI - 676032, KANNUR D.T., KERALA
An ISO 9001: 2008 Certified Institution

POST EVENT IMPACT ANALYSIS REPORT

1	Event type and name	ADD-ON COURSE INDUSTRIAL ROBOTICS & INTERNET OF THINGS	
2	Date and time	13-02-2023 TO 17-02-2023 (09.00 AM TO 04.00 PM)	
3	Participants/ audience	S4 ME (2021-25) - 24 STUDENTS	
4	Venue	CAD LAB, VIMAL JYOTHI ENGINEERING COLLEGE	
5	Outcomes of the event	<ul style="list-style-type: none">• Students have the basic knowledge of embedded systems and Design and implement simple embedded systems• Students understood the Arduino platform concept and established the communication between the software and the board.• Students can implement basic python codes in Raspberry pi• Students are able to understand the working principle of different types of sensors & actuators and their implementation in various robots• Students controlled two-axis robotic arm through PC and serial communication	
6	Attainment level of outcomes	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO11, PO12, PSO1, PSO2 - Attained	
7	Gist of feedback from the participants	<ul style="list-style-type: none">• Students were very interested and benefitted from the training sessions and suggested more such sessions to be conducted in the future.• Detailed feedback from the students has been recorded.	
8	Connected POs/COs	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO11, PO12, PSO1, PSO2	
9	Any other relevant information	<ul style="list-style-type: none">• Certificates were issued to the students who attended the training sessions.• Appropriate activity points will be assigned as per the KTU guidelines.	
10	Responsible persons	Report prepared by Mejo M Francis (Assistant Professor, ME)	Approved by Cdr. Raju K.K (retd) , HOD ME

Mejo M Francis
23/2/23

MEJO M FRANCIS
Assistant Professor
Department of
Mechanical Engineering
Vimal Jyothi Engg. College

Cdr. Raju K.K.
Assistant Professor & HOD
Department of Mechanical Engineering
Vimal Jyothi Engg. College

From

Mejo M Francis

AP ME.

Tutor S4 ME (2021-25) Batch

S31 ME

To

Principal

Vimal Jyothi Engineering College

Subject: Proposal for Add on Course in Industrial Robotics & Internet of Things for S4 ME Students

Sir

This is to inform you that ME Department is organizing an Add on Course in Industrial Robotics & Internet of Things for S4 ME (2021-25) students from 6th to 10 Feb 2023, in association with Klein Robotics Thrissur. The detailed proposal is attached with this letter. In this regard the training center is charging an amount of Rs 1500 /- per student for the add-on course. The total amount for the program is Rs 40000/- This includes training fee 36000/- (for 24 students) and the transportation charges Rs 4000/- for the two resource persons.

I kindly request to you approve the add on course proposal and sanction the amount

18th Jan 2023

VJEC

Regards



Mejo M Francis

AP ME

Recommended

[Signature]
18/01/2023

*Permanence - 221 x 1500
Food for officials.
Accommodation -*

[Signature]
23/01/23

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VIMAL JYOTHI ENGINEERING COLLEGE, CHERPERI
DEPARTMENT OF MECHANICAL ENGINEERING

Offering

ADD-ON COURSE on

Industrial Robotics and Internet of Things

COURSE CODE: ADME401

Course duration: 5 days (30 hours)

In association with

Klein Robotics & Skillobotics Edutech Pvt. Ltd

FOR 4th SEMESTER MECHANICAL ENGINEERING STUDENTS

Venue: CAD lab from 13/02/2023 to 17/02/2023

**TRAINING INSTITUTE:
 SKILLOBOTICS EDUTECH PVT. LTD**

Convener: Cdr. Raju K Kuriakose (retd), HOD ME
Staff Coordinators: Mr. Mejo M Franics, Dr. Sreekanth M.P, Mr. Anoop K. R

**FUNDED AND SPONSORED BY
 VIMAL JYOTHI ENGINEERING COLLEGE**





In Association with
Skillrobotics Edutech Pvt. Ltd



First Floor, SreeHari Complex,
Kallur Road, Amballur, Thrissur.
680302
Email: kleinrobotics3@gmail.com

Mob: 9867529669

ADD-ON COURSE

Industrial Robotics and Internet of Things:

Duration: 30 Hours (6 hrs. x 5 Days)

Program Outline

Introduces Arduino, Raspberry Python and IOT Projects and evolves into the creation of working models. It covers component identification and preparation as well as various terminations. The focus of the program is on the development of problem solving skills through practical solutions. Assessment relates to accuracy, neatness, quality of manufacturing, programming mastery as well as safety and effort relating to shop tool use and timely project completion.

Objective

- ❖ To impart basic understanding of the concept of embedded systems.
- ❖ To introduce the concepts of Arduino platform and basic coding.
- ❖ To develop Python language programming skills
- ❖ To interface simple peripheral devices to a Microcontroller and equip
studentgroupstodesignandimplementsimpleembeddedsystems
- ❖ To introduce the concepts of IoT.



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Time Line	Content	Description	Duration
Day 1	Introduction to Basic Electronic Devices	<ul style="list-style-type: none">• Basics of Electronic Components.• Introduction to Bread board and other electronic components.• Introduction to different types of circuits. (Example to Glow Led)• How to Calculate and design an electronic circuit.	1hr 30 mins
Day 1	Introduction to Embedded System	<ul style="list-style-type: none">• What is an Embedded System• What is a controller• Difference between Micro-processor and Micro-Controller.• Introduction to Different programming Language and Controllers	1hr 30 mins



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Day 1	Introduction to Arduino	<ul style="list-style-type: none">• What is a Arduino Board• Different types of Arduino Board.• Hardware description of Arduino Board• Powering Arduino UNO and Using Ideal Pins to Glow led's.	1hr 30 mins
Day 1	Introduction to Sensors	<ul style="list-style-type: none">• Introduction to different types of sensors and their operation.• Purpose of different pins of sensors and their operating style.• Application of different sensors.• Materials used for sensors and their conductivity.	1hr 30 mins
Day 2	Introduction to Arduino IDE	<ul style="list-style-type: none">• Basics of Arduino IDE and steps to download and install the software.• Installing different types of packets into the software.• Learning to establish the connection between the software and the Arduino board.	1hr



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Day 2	Basic Programming	<ul style="list-style-type: none"> • Basic code words, Configuring Input pins etc. • What is Input data , Output data, read command, write command • Basic syntax error and also Introduction to commands 	2 hr
Day 2	Project 1	<ul style="list-style-type: none"> • To glow Led in different transition using delays • To glow led taking input data from sensors like LDR. • To glow array of led and apply delays in different led. 	2hr 30 mins
Day 2	Activity	<ul style="list-style-type: none"> • Students can try on their own to combine different combination of circuits and program it. 	30 min
Day 3	Principle of working for Ultrasonic sensor and Buzzer	<ul style="list-style-type: none"> • Students will understand the principle of working for Ultrasonic sensor and Buzzer. 	30 mins



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Day 3	Project 3	<ul style="list-style-type: none"> To Interface the ultrasonic sensor with Arduino Uno. To Interface buzzer with Arduino Uno. To control the buzzer output based on input of ultrasonic sensor and implement the blind man stick. 	2hr 30 mins
Day 3	Introduction to Motor drivers and motors	<ul style="list-style-type: none"> Understand the principle and working of motor drivers and how H-bridge works. Understand the principle of working of DC motors in depth. 	30 mins
Day 3	Project 4	<ul style="list-style-type: none"> Interface the Ultrasonic sensor with Arduino IDE and interface the DC motors through motor drivers to Arduino IDE. Control the DC motors with Arduino based on inputs from ultrasonic sensor. 	2hrs 30 mins
Day 4	Introduction to Servo motors and Serial communication	<ul style="list-style-type: none"> To understand the principle and working of servo motors. To understand the principles of serial communication. 	30 mins
Day 4	Project 5	<ul style="list-style-type: none"> To interface servo motors to Arduino IDE and establish a serial communication between Arduino and PC. Perform two axis robotic arms controlled through PC using serial communication. 	2 hrs 30 mins



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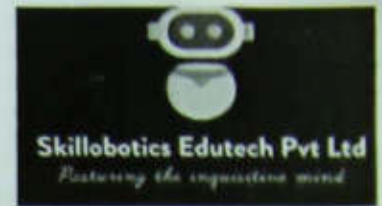
First Floor, SreeHari Complex,
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 680302

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Day 4	Introduction to IOT	<ul style="list-style-type: none"> • What are IoT and its application, Node MCU • Programming Node MCU using Arduino IDE • Sending Data to Arduino, • Creating web interface 	1 hr 30 mins
Day 4	Project 6	<ul style="list-style-type: none"> • To Interface Ultrasonic sensors, DC motors and Servo motors with Arduino IDE and control the obstacle avoidance robot with robotic arm using IOT web interface. 	1 hr 30 mins
Day 5	Introduction to MIT app inventor	<ul style="list-style-type: none"> • Introduction, • creatingbasicinterface, • Connectingblocks. 	1 hr
Day 5	Project 7	<ul style="list-style-type: none"> • Developing an app using MIT app inventor for controlling obstacle avoidance robot with two axis robotic arm. • Sending signals from app to Arduino for control of motors based on inputs given by app. 	2 hrs
Day 5	Introduction to Raspberry pi and Python coding	<ul style="list-style-type: none"> • Getting started, • Installing Nodes, • GUI, Embedded Linux, • Introduction to Terminal, • Basic commands in python, • GPIO Planning, 	1 hr 30 mins



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		<ul style="list-style-type: none">controlling devices using Raspberry Pi,Serial communication with Arduino	
Day 5	Project 8	<ul style="list-style-type: none">LED and motor interfacing with Raspberry Pi,Sending serial data to Arduino	1 hr 30 mins

Commercials

Details	Cost
<i>Internship Charges per Participant</i>	<i>Rs. 1500/- Per Student</i>



DEPARTMENT OF MECHANICAL ENGINEERING

Add – on Course on Industrial Robotics and Internet of Things

S4 ME (2021 - 25 Batch)

SL NO.	KTU REGISTER NUMBER	NAME	SIGNATURE
1	VML21ME001	ABHIJITH K	
2	VML21ME002	ABHINANDH NARAYAN	
3	VML21ME003	ABHINAV R	
4	VML21ME004	ABIN J PRASAD	
5	VML21ME005	AMAN AHAMMED	
6	VML21ME006	ANASWAR SUNIL KUMAR	
7	VML21ME007	ANUMOL BINOY	
8	VML21ME008	ASHWIN RAJ T	
9	VML21ME009	AVINASH C	
10	VML21ME010	DEVAKH S SURESH	
11	VML21ME011	GILBERT THOMAS	
12	VML21ME012	GOVIND MANOJ	
13	VML21ME013	HRITHIK THAROL	
14	VML21ME014	INDRAJITH C NAMBIAR	
15	VML21ME015	JOEL SUNNY	
16	VML21ME016	JYOTHISH BIJITH	
17	VML21ME017	MIRWAIZ OMAR A NAZEER	
18	VML21ME018	RICH ABRAHAM THOMAS	
19	VML21ME019	SAFWAN THAILAKKANDY	
20	VML21ME020	SAYAND V K	
21	VML21ME021	SAYOOJ RAJAN	
22	VML21ME022	SUBIN M	
23	VML21ME023	VISHNU C	
24	VML21ME024	YADHUKRISHNA	

VIMAL JYOTHI ENGINEERING COLLEGE, CHEMPERI
DEPARTMENT OF MECHANICAL ENGINEERING

ADD - ON COURSE ON INDUSTRIAL ROBOTICS AND INTERNET OF THINGS

Klein Robotics & Skillobotics Edutech Pvt. Ltd

S4 - ME - (2021-25 Batch)

ATTENDANCE DAY 1 - 13, FEBRUARY 2023

KTU REGISTER NUMBER	NAME	HOURS					
		1	2	3	4	5	6
VML21ME001	ABHIJITH K	P	P	P	P	P	P
VML21ME002	ABHINANDH NARAYAN	P	P	P	P	P	P
VML21ME003	ABHINAV R	P	P	P	P	P	P
VML21ME004	ABIN J PRASAD	P	P	P	P	P	P
VML21ME005	AMAN AHAMMED	P	P	P	P	P	P
VML21ME006	ANASWAR SUNIL KUMAR	P	P	P	P	P	P
VML21ME007	ANUMOL BINOY	P	P	P	P	P	P
VML21ME008	ASHWIN RAJ T	P	P	P	P	P	P
VML21ME009	AVINASH C	P	P	P	P	P	P
VML21ME010	DEVAKH S SURESH	P	P	P	P	P	P
VML21ME011	GILBERT THOMAS	P	P	P	P	P	P
VML21ME012	GOVIND MANOJ	P	P	P	P	P	P
VML21ME013	HRITHIK THAROL	P	P	P	P	P	P
VML21ME014	INDRAJITH C NAMBIAR	P	P	P	P	P	P
VML21ME015	JOEL SUNNY	P	P	P	P	P	P
VML21ME016	JYOTHISH BIJITH	P	P	P	P	P	P
VML21ME017	MIRWAIZ OMAR A NAZEER	P	P	P	P	P	P
VML21ME018	RICH ABRAHAM THOMAS	P	P	P	P	P	P
VML21ME019	SAFWAN THAILAKKANDY	P	P	P	P	P	P
VML21ME020	SAYAND V K	P	P	P	P	P	P
VML21ME021	SAYOOJ RAJAN	P	P	P	P	P	P
VML21ME022	SUBIN M	P	P	P	P	P	P
VML21ME023	VISHNU C	P	P	P	P	P	P
VML21ME024	YADHUKRISHNA	P	P	P	P	P	P

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6/2/23



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DEPARTMENT OF MECHANICAL ENGINEERING

ADD - ON COURSE ON INDUSTRIAL ROBOTICS AND INTERNET OF THINGS

Klein Robotics & Skillobotics Edutech Pvt. Ltd

S4 - ME - (2021-25 Batch)

ATTENDANCE

DAY 2 - 14, FEBRUARY 2023

KTU REGISTER NUMBER	NAME	HOURS					
		1	2	3	4	5	6
VML21ME001	ABHIJITH K	P	P	P	P	P	P
VML21ME002	ABHINANDH NARAYAN	P	P	P	P	P	P
VML21ME003	ABHINAV R	P	P	P	P	P	P
VML21ME004	ABIN J PRASAD	P	P	P	P	P	P
VML21ME005	AMAN AHAMMED	P	P	P	P	P	P
VML21ME006	ANASWAR SUNIL KUMAR	P	P	P	P	P	P
VML21ME007	ANUMOL BINOY	P	P	P	P	P	P
VML21ME008	ASHWIN RAJ T	P	P	P	P	P	P
VML21ME009	AVINASH C	P	P	P	A	P	P
VML21ME010	DEVAKH S SURESH	P	P	P	P	P	P
VML21ME011	GILBERT THOMAS	P	P	P	P	P	P
VML21ME012	GOVIND MANOJ	P	P	P	P	P	P
VML21ME013	HRITHIK THAROL	P	P	P	P	P	P
VML21ME014	INDRAJITH C NAMBIAR	P	P	P	P	P	P
VML21ME015	JOEL SUNNY	P	P	P	P	P	P
VML21ME016	JYOTHISH BIJITH	P	P	P	P	P	P
VML21ME017	MIRWAIZ OMAR A NAZEER	P	P	P	P	P	P
VML21ME018	RICH ABRAHAM THOMAS	P	P	P	P	P	P
VML21ME019	SAFWAN THAILAKKANDY	P	P	P	A	P	P
VML21ME020	SAYAND V K	P	P	P	P	P	P
VML21ME021	SAYOOJ RAJAN	P	P	P	P	P	P
VML21ME022	SUBIN M	P	P	P	P	P	P
VML21ME023	VISHNU C	P	P	P	P	P	P
VML21ME024	YADHUKRISHNA	P	P	P	P	P	P

Handwritten signature and date: 14/2/23

VIMAL JYOTHI ENGINEERING COLLEGE, CHERPERI
DEPARTMENT OF MECHANICAL ENGINEERING

ADD - ON COURSE ON INDUSTRIAL ROBOTICS AND INTERNET OF THINGS

Klein Robotics & Skillrobotics Edutech Pvt. Ltd

S4 - ME - (2021-25 Batch)

ATTENDANCE DAY 3 - 15, FEBRUARY 2023

KTU REGISTER NUMBER	NAME	HOURS					
		1	2	3	4	5	6
VML21ME001	ABHIJITH K	P	P	P	P	P	P
VML21ME002	ABHINANDH NARAYAN	P	P	P	P	P	P
VML21ME003	ABHINAV R	P	P	P	P	P	P
VML21ME004	ABIN J PRASAD	P	P	P	P	P	P
VML21ME005	AMAN AHAMMED	P	P	P	P	P	P
VML21ME006	ANASWAR SUNIL KUMAR	P	P	P	P	P	P
VML21ME007	ANUMOL BINOY	P	P	P	P	P	P
VML21ME008	ASHWIN RAJ T	P	P	P	P	P	P
VML21ME009	AVINASH C	P	P	P	P	P	P
VML21ME010	DEVAKH S SURESH	P	P	P	P	P	P
VML21ME011	GILBERT THOMAS	A	A	P	P	P	P
VML21ME012	GOVIND MANOJ	P	P	P	P	P	P
VML21ME013	HRITHIK THAROL	P	P	P	P	P	P
VML21ME014	INDRAJITH C NAMBIAR	P	P	P	P	P	P
VML21ME015	JOEL SUNNY	P	P	P	P	P	P
VML21ME016	JYOTHISH BIJITH	P	P	P	P	P	P
VML21ME017	MIRWAIZ OMAR A NAZEER	P	P	P	P	P	P
VML21ME018	RICH ABRAHAM THOMAS	A	A	P	P	P	P
VML21ME019	SAFWAN THAILAKKANDY	P	P	P	P	P	P
VML21ME020	SAYAND V K	P	P	P	P	P	P
VML21ME021	SAYOOJ RAJAN	P	P	P	P	P	P
VML21ME022	SUBIN M	P	P	P	P	P	P
VML21ME023	VISHNU C	P	P	P	P	P	P
VML21ME024	YADHUKRISHNA	P	P	P	P	P	P

Signature
15/2/23

VIMAL JYOTHI ENGINEERING COLLEGE, CHEMPERI

DEPARTMENT OF MECHANICAL ENGINEERING

ADD - ON COURSE ON INDUSTRIAL ROBOTICS AND INTERNET OF THINGS

Klein Robotics & Skillobotics Edutech Pvt. Ltd

S4 - ME - (2021-25 Batch)

ATTENDANCE DAY 4 - 16, FEBRUARY 2023

KTU REGISTER NUMBER	NAME	HOURS					
		1	2	3	4	5	6
VML21ME001	ABHIJITH K	P	P	P	P	P	P
VML21ME002	ABHINANDH NARAYAN	P	P	P	P	P	P
VML21ME003	ABHINAV R	P	P	P	P	P	P
VML21ME004	ABIN J PRASAD	P	P	P	P	P	P
VML21ME005	AMAN AHAMMED	P	P	P	P	P	P
VML21ME006	ANASWAR SUNIL KUMAR	P	P	P	P	P	P
VML21ME007	ANUMOL BINOY	P	P	P	P	P	P
VML21ME008	ASHWIN RAJ T	P	P	P	P	P	P
VML21ME009	AVINASH C	P	P	P	P	P	P
VML21ME010	DEVAKH S SURESH	P	P	P	P	P	P
VML21ME011	GILBERT THOMAS	P	P	P	P	P	P
VML21ME012	GOVIND MANOJ	A	A	P	P	P	P
VML21ME013	HRITHIK THAROL	P	P	P	P	P	P
VML21ME014	INDRAJITH C NAMBIAR	P	P	P	P	P	P
VML21ME015	JOEL SUNNY	P	P	P	P	P	P
VML21ME016	JYOTHISH BIJITH	P	P	P	P	P	P
VML21ME017	MIRWAIZ OMAR A NAZEER	P	P	P	P	P	P
VML21ME018	RICH ABRAHAM THOMAS	P	P	P	P	P	P
VML21ME019	SAFWAN THAILAKKANDY	P	P	P	P	P	P
VML21ME020	SAYAND V K	P	P	P	P	P	P
VML21ME021	SAYOOJ RAJAN	P	P	P	P	P	P
VML21ME022	SUBIN M	P	P	P	P	P	P
VML21ME023	VISHNU C	P	P	P	P	P	P
VML21ME024	YADHUKRISHNA	P	P	P	P	P	P

Handwritten signature and date: 16/2/23

VIMAL JYOTHI ENGINEERING COLLEGE, CHEMPERI
DEPARTMENT OF MECHANICAL ENGINEERING

ADD - ON COURSE ON INDUSTRIAL ROBOTICS AND INTERNET OF THINGS

Klein Robotics & Skillobotics Eduitech Pvt. Ltd

S4 - ME - (2021-25 Batch)

ATTENDANCE

DAY 5 - 17, FEBRUARY 2023

KTU REGISTER NUMBER	NAME	HOURS					
		1	2	3	4	5	6
VML21ME001	ABHIJITH K	P	P	P	P	P	P
VML21ME002	ABHINANDH NARAYAN	P	P	P	P	P	P
VML21ME003	ABHINAV R	P	P	P	P	P	P
VML21ME004	ABIN J PRASAD	P	P	P	P	P	P
VML21ME005	AMAN AHAMMED	P	P	P	P	P	P
VML21ME006	ANASWAR SUNIL KUMAR	P	P	P	P	P	P
VML21ME007	ANUMOL BINOY	P	P	P	P	P	P
VML21ME008	ASHWIN RAJ T	P	P	P	P	P	P
VML21ME009	AVINASH C	P	P	P	P	P	P
VML21ME010	DEVAKH S SURESH	P	P	P	P	P	P
VML21ME011	GILBERT THOMAS	P	P	P	P	P	P
VML21ME012	GOVIND MANOJ	P	P	P	P	P	P
VML21ME013	HRITHIK THAROL	P	P	P	P	P	P
VML21ME014	INDRAJITH C NAMBIAR	P	P	P	P	P	P
VML21ME015	JOEL SUNNY	A	A	P	P	P	P
VML21ME016	JYOTHISH BIJITH	P	P	P	P	P	P
VML21ME017	MIRWAIZ OMAR A NAZEER	P	P	P	P	P	P
VML21ME018	RICH ABRAHAM THOMAS	P	P	P	P	P	P
VML21ME019	SAFWAN THAILAKKANDY	P	P	P	P	P	P
VML21ME020	SAYAND V K	P	P	P	P	P	P
VML21ME021	SAYOOJ RAJAN	P	P	P	P	P	P
VML21ME022	SUBIN M	P	P	P	P	P	P
VML21ME023	VISHNU C	P	P	P	P	P	P
VML21ME024	YADHUKRISHNA	P	P	P	P	P	P


Dr
19/2/23

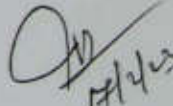
AD401: ADD ON COURSE MINI PROJECT EVALUATION RUBRICS

PROJECT TITLE:

	HIGH,5 marks	MEDIUM,3-4 marks	LOW,0-2 marks
Hardware Implementation	All defined objectives are achieved, hardware working. project properly demonstrated	Some of the defined objectives are achieved, hardware working well and not properly demonstrated	Defined objectives are not achieved; hardware not working.
Demonstration/ Presentation	Presentation / explanation of the project are appropriate and well delivered	Presentation / explanation of the project are appropriate but not well delivered	Presentation / explanation of the project are not appropriate and not well delivered

SI No	Name	HARDWARE IMPLEMENTATION (CO 1,2,3,4,5)	DEMONSTRATON	TOTAL MARKS
1	VML21ME001-ABHIJITH K	4	5	9
2	VML21ME002-ABHINANDH NARAYAN	4	4	8
3	VML21ME003-ABHINAV R	4	3	7
4	VML21ME004-ABIN J PRASAD	4	5	9
5	VML21ME005-AMAN AHAMMED	4	4	8
6	VML21ME006-ANASWAR SUNIL KUMAR	3.5	3.5	7
7	VML21ME007-ANUMOL BINOY	4	4	8
8	VML21ME008-ASHWIN RAJ T	4	4	8
9	VML21ME009-AVINASH C	3.5	3.5	7
10	VML21ME010-DEVAKH S SURESH	4	3.5	7.5
11	VML21ME011-GILBERT THOMAS			
12	VML21ME012-GOVIND MANOJ	4	3	7
13	VML21ME013-HRITHIK THAROL	4	5	9
14	VML21ME014-INDRAJITH C NAMBIAR	4	3.5	7.5
15	VML21ME015-JOEL SUNNY	4.5	3.5	8
16	VML21ME016-JYOTHISH BIJITH	4	5	9
17	VML21ME017-MIRWAIZ OMAR A NAZEER	3.5	4	7.5
18	VML21ME018-RICH ABRAHAM THOMAS	4	4	8
19	VML21ME019-SAFWAN THAILAKKANDY	4	4	8
20	VML21ME020-SAYAND V K	3	4	7
21	VML21ME021-SAYOOJ RAJAN	5	4	9
22	VML21ME022-SUBIN M	4	3	7
23	VML21ME023-VISHNU C	3.5	4.5	8
24	VML21ME024-YADHUKRISHNA	4	4	8


 Pradyumna Mohan
 17/02/2023


 17/2/23

Abhijithrk
YML21ME001
17/02/2023

AD ME 401
FINAL ASSESSMENT
Industrial Robotics and the Internet of Things add on course
By Skillbotics Edutech Pvt.Ltd



Skillbotics Edutech Pvt Ltd
Powering up your future

(CO, Level)

Q1. Which of the following best describes the Arduino? CO 1, L1
a. It is a microcontroller
b. It is a microprocessor
c. It is a development board developed by Arduino company
d. None of the above

Q2. Which of the following is the brain of the Arduino board? CO 2, L1
a. ARM7 processor
b. AtMega 328P
c. ESP 8266 NodeMCU
d. None of the above

Q3. How many analog pins are available on the Arduino? CO 2, L1
a. 14
b. 5
c. 6
d. 12

Q4. What is the full form of PWM? CO 4,L1
a. Pulse wide magnifier
b. Pulse width modulation
c. Pulse width magnifier
d. None of the above

Q5. What is the formula for the duty cycle? CO 4 ,L1
a. Ton/Toff
b. Toff/Ton
c. $\text{Ton}/(\text{Ton}+\text{Toff})$
d. $\text{Toff}/(\text{Ton}+\text{Toff})$

Q6. Which of the following best describes the behavior of LDR? CO 4,L2
a. When light falling on the sensor is more resistance is more
b. When light falling on the sensor is less resistance is more
c. When light falling on the sensor is less resistance is less
d. None of the above

Q7. If 3 resistances of 100 ohms each are connected in series with a 10V battery, what will be the current flowing through each resistor? CO 1,L2
a. 3.33 A
b. 0.12 A
c. 0.033 A
d. 0.67 A

Q8. What is the significance of the Trigger pin used in an Ultrasonic sensor? CO 4,L1
a. It captures the reflected sound wave
b. It creates an alarm when an obstacle is detected
c. It generates a Sound wave pulse continuously
d. None of the above

Q9. What are the two types of buzzers? CO 4,L1
Ans. Active and Passive buzzers

Q10. If the time taken by the Ultrasonic sensor's sound pulse to reflect back is 200 microseconds, what is the distance between the obstacle and the sensor? CO 4,L3
a. 1000 cm
b. 100cm
c. 1 m
d. 10 cm

Q11. What is the main use of PWM in Arduino? CO 2,CO4,L1
a. Take an analog input
b. Take a digital input
c. Output a digital signal
d. Output an analog signal

Q12. What is each point in the internet of things called? CO3,CO 5,L1
a. Edge
b. Weight
c. Node
d. None of the above

Q13. What is the significance of the Serial.begin() command? CO 2,L1
a. It prints the serial data
b. It prints the serial data on a new line
c. It initializes the serial communication
d. None of the above

Q14. What does the Baudrate signify in serial communication? CO 2,L1

- a. The number of loops to be performed
- b. The number of bytes transferred to the serial port every second
- c. The serial number
- d. None of the above

Q15. What is the difference between a Digital and an analog signal? CO 2,CO 4,L2

- a. A digital signal is continuous in time and the analog signal is not
- b. The Analog signal is continuous in time and amplitude domain while the digital signal is not.
- c. A digital signal is continuous in time and amplitude domain while an analog signal is not.
- d. None of the above.

COURSE OUTCOMES

1. Understand the concept of embedded systems and Design and implement simple embedded systems
2. Understand the concepts of Arduino platform and establish the communication between the software and the Arduino board.
3. Develop Python language programming skills and implement basic python codes in Raspberry pi
4. Understand the working principle of different types of sensors & actuators and its implementation in various robots
5. Understand the basics of IoT and Perform two axis robotic arms controlled through PC




CERTIFICATE OF COMPLETION



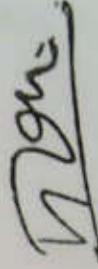
THIS IS TO CERTIFY THAT

Mr / Miss JAYISHH BIJITH-----

Has successfully completed 5 Days, "Add-on Course For Industrial Robotics and Internet of Things" conducted by Skillobotics Edutech Pvt. Ltd.


Pradyumna Mishra
Chief Executive Officer

Skillobotics Edutech Pvt Ltd



Principal

Vimal Jyothi College of Engineering



Skillobotics Edutech Pvt Ltd

Enriching the experiential learning





DEPARTMENT OF MECHANICAL ENGINEERING
COURSE OUTCOMES (COs) and CO- PO/PSO MAPPING



COURSE: B TECH (MECHANICAL ENGINEERING) 2019 SCHEME

SEMESTER: S4 ME

SUBJECT CODE & NAME: ADD-ON COURSE- ADME 401: INDUSTRIAL ROBOTICS & INTERNET OF THINGS

NAME & DESIGNATION TRAINING FACULTY MEMBER: PRADYUMNA MOHANI (CHIEF TECHNOLOGY OFFICER, SKILROBOTICS EDUTECH PRIVATE LIMITED PUNE)

COURSE OUTCOMES

1. Understand the concept of embedded systems and Design and implement simple embedded systems
2. Understand the concepts of Arduino platform and establish the communication between the software and the Arduino board.
3. Develop Python language programming skills and implement basic python codes in Raspberry pi
4. Understand the working principle of different types of sensors & actuators and its implementation in various robots
5. Perform two axis robotic arms controlled through PC using serial communication

CO-PO/PSO MAPPING of ADME 401: INDUSTRIAL ROBOTICS & INTERNET OF THINGS

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

Note:

1. Enter correlation levels 1, 2 or 3 as defined below:

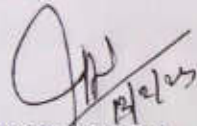
1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

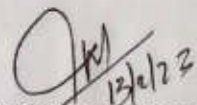
CO-PO/PSO MAPPING JUSTIFICATION

MAPPING	CORRELATION LEVELS	CONNECTED POS/PSOS	JUSTIFICATION
CO1	2,3,2,3, 3,3,2	PO1,PO2, PO3,PO5, PO12,PS O1,PSO2	Using engineering knowledge, developing solutions, analyzing problems, using modern tools, and implementing product development for lifelong learning in embedded systems
CO2	2,3,2,3, 3,2,3,3, 2	PO1,PO2, PO3,PO5, PO9,PO11 ,PO12,PS O1,PSO2	The application of engineering knowledge, the development of solutions, the analysis of problems, the use of modern tools, and the implementation of product development for lifelong learning of coding in Arduino platforms
CO3	2,3,2,3, 3,2,3,3, 2	PO1,PO2, PO3,PO4, PO5,PO6, PO9,PO11 ,PO12,PS O1,PSO2	Using engineering knowledge, developing solutions, analyzing problems, using modern tool like python, and implementing product development for lifelong learning
CO4	2,3,2,3, 3,2,3,3, 2	PO1, ,PO4,PO5, PO6,PO9, PO11,PO1 2,PSO1,P SO2	Developing solutions, analyzing problems, and implementing product development for lifelong learning in robotics sensors /transducers-based platforms using engineering knowledge and tools
CO5	2,3,2,3, 3,2,3,3, 2	PO1,PO2, PO3,PO4, PO5,PO6, PO9,PO11 ,PO12,PS O1,PSO2	A lifetime of coding in Arduino platforms requires use of engineering knowledge, designing solutions, analyzing problems, utilizing modern tools, and implementing product development for lifelong learning


NAME OF FACULTY

DESIGNATION

SIGNATURE


NAME OF COURSE COORDINATOR

DESIGNATION

SIGNATURE


HEAD OF THE DEPARTMENT

SIGNATURE



DEPARTMENT OF MECHANICAL ENGINEERING

Add – on Course on Industrial Robotics and Internet of Things

S4 ME – 2021 Admission (AY 2022-23)

Duration 13th Feb 2023 – 17th Feb 2023 (30 Hours)

The syllabus of the course is stipulated below:

Day 1, 13, February 2023: Introduction to Basic Electronic Devices

- Basics of Electronic Components.
- Introduction to Bread board and other electronic components.
- Introduction to different types of circuits. (Example to Glow Led)
- How to Calculate and design an electronic circuit.
- Introduction to different types of sensors and their operation.
- Purpose of different pins of sensors and their operating style.
- Application of different sensors.
- Materials used for sensors and their conductivity.

Day 2, 14, February 2023: Introduction to Basic Electronic Devices

- Basic code words, Configuring Input pins etc.
- What is Input data , Output data, read command, write command
- Basic syntax error and also Introduction to commands
- To glow Led in different transition using delays
- To glow led taking input data from sensors like LDR.
- To glow array of led and apply delays in different led.
- Activity: Students can try on their own to combine different combination of circuits and program it.

Day 3, 15, February 2023: Introduction to Basic Electronic Devices

- Students will understand the principle of working for Ultrasonic sensor and Buzzer.
- To Interface the ultrasonic sensor with Arduino Uno.
- To Interface buzzer with Arduino Uno.
- To control the buzzer output based on input of ultrasonic sensor and implement the blind man stick.
- Understand the principle and working of motor drivers and how H-bridge works.
- Understand the principle of working of DC motors in depth.
- Interface the Ultrasonic sensor with Arduino IDE and interface the DC motors through motor drivers to Arduino IDE.
- Control the DC motors with Arduino based on inputs from ultrasonic sensor.

Day 4, 16, February 2023: Introduction to Basic Electronic Devices



- To understand the principle and working of servo motors.
- To understand the principles of serial communication.
- To interface servo motors to Arduino IDE and establish a serial communication between Arduino and PC.
- Perform two axis robotic arms controlled through PC using serial communication.
- What are IoT and its application, Node MCU
- Programming Node MCU using Arduino IDE
- Sending Data to Arduino
- Creating web interface
- To Interface Ultrasonic sensors, DC motors and Servo motors with Arduino IDE and control the obstacle avoidance robot with robotic arm using IOT web interface

Day 5, 17, February 2023: Introduction to Basic Electronic Devices

- Introduction to MIT app inventor
- Creating basic interface
- Connecting blocks.
- Developing an app using MIT app inventor for controlling obstacle avoidance robot with two axis robotic arm.
- Sending signals from app to Arduino for control of motors based on inputs given by app.
- Introduction to Raspberry pi and Python coding - Getting started, Installing Nodes, GUI, Embedded Linux, Introduction to Terminal, Basic commands in python, and GPIO Planning.

Report

Introduction:

The add-on course on **Industrial Robotics and Internet of Things** was conducted for S4 ME (2021-25 Batch) in association with Skillbotics Edutech Pvt. Ltd. The coordinators of the course was Mr. Mejo M Francis, Mr. Anoop K R, and Dr. Sreekanth M P (Faculties from ME). The course started from 13, February 2023 to 17, February 2023 (Total 30 hours: 6 hours per day). The course started on 13, February 2023 at 9 AM with an introductory speech by HOD-ME. He has also introduced the resource persons to the students





Event Details:

Day 1:

The first day of the Introduction to Basic Electronic Devices covered the basics of electronic components, including the introduction to breadboard and different types of circuits. Students were introduced to the concept of calculating and designing an electronic circuit, and also learned about different types of sensors, their operation, and their applications. Materials used for sensors and their conductivity were also discussed.



Day 2:

On the second day, students learned about basic code words, configuring input pins, and input/output data. They also learned about syntax errors and different commands used in programming electronic devices. Students practiced programming LED lights to glow in different transitions using delays and taking input from sensors like LDR. They also worked on glowing an array of LED lights and applied different delays to each LED. The activity of combining different circuits and programming them was also performed by the students.





Day 3:

The third day covered the principle of working of ultrasonic sensors, buzzer, motor drivers, and DC motors. Students learned how to interface ultrasonic sensors and buzzer with Arduino IDE, control buzzer output based on ultrasonic sensor inputs, and interface DC motors with motor drivers to control them using Arduino IDE. They also learned about controlling DC motors based on inputs from the ultrasonic sensor.



Day 4:

On the fourth day, students learned about the principle and working of servo motors and serial communication. They learned how to interface servo motors with Arduino IDE, establish serial communication between Arduino and PC, and control two-axis robotic arms through PC using serial communication. They also learned about IoT and its application, Node MCU, programming Node MCU using Arduino IDE, creating web interfaces, and controlling the obstacle avoidance robot with a robotic arm using IoT web interfaces.





Day 5:

On the final day of the Introduction to Basic Electronic Devices, students were introduced to MIT App Inventor and learned how to create basic interfaces and connect blocks. They developed an app using MIT App Inventor for controlling the obstacle avoidance robot with a two-axis robotic arm and sending signals from the app to Arduino for controlling motors based on the inputs given by the app. They also learned about Raspberry Pi and Python coding, including getting started, installing nodes, GUI, embedded Linux, introduction to terminal, basic commands in Python, and GPIO planning.



Overall, the Introduction to Basic Electronic Devices was a comprehensive program that covered various aspects of electronic devices, including the basics of electronic components, different types of circuits, sensors, motors, and IoT. The program provided students with practical knowledge of programming and interfacing electronic devices using Arduino IDE, MIT App Inventor, and Python coding. Students also got the opportunity to work on various activities, including programming LED lights, controlling motors using different sensors, and developing apps for controlling the obstacle avoidance robot with a two-axis robotic arm.

Conclusion:

The event was concluded on 17, February 2023 at 4 PM with a vote of thanks by HOD – ME. Total of 24 students actively participated in the event. Students gave positive feedback about the course.

JH
H/2/23

S4 ME ADD-ON COURSE

ADME 401: INDUSTRIAL ROBOTICS & INTERNET OF THINGS COMPLETION REPORT

The Industrial Robotics and Internet of Things program is designed to provide participants with a basic understanding of the embedded systems concept, Arduino, Raspberry Pi, Python, and Internet of Things. The course is divided into 5 days, with 6 hours of instruction each day. The primary focus of the program is on the development of practical solutions to problems related to industrial robotics and the Internet of Things.

Objectives:

The main objectives of the program are to impart a basic understanding of the concept of embedded systems, introduce the concepts of Arduino platform and basic coding, develop Python language programming skills, interface simple peripheral devices to a Microcontroller, and introduce the concepts of IoT.

Content:

The program begins by introducing the concept of embedded systems and the basic components that make up an embedded system. The participants are introduced to the Arduino platform, including the hardware and software components. They learn how to write basic code using Arduino and how to interface simple peripheral devices such as LEDs, sensors, and motors to the Microcontroller.

The program also covers the Python programming language, which is used to develop more advanced programs for the Internet of Things. Participants learn the basic syntax and structure of the Python language, and how to use it to develop more advanced programs. Throughout the program, participants work in groups to design and implement simple embedded systems, using the knowledge they have acquired about Arduino and Python. They also learn about the Internet of Things, including the various components that make up an IoT system, such as sensors, gateways, and cloud-based platforms.

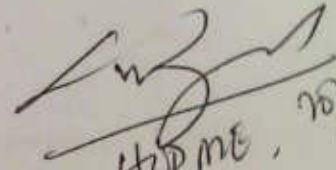
Assessment:

Assessment in the program is based on various factors, including accuracy, neatness, programming mastery, safety, and timely project completion. Participants are required to complete a series of practical exercises and projects, which are graded based on the above criteria.

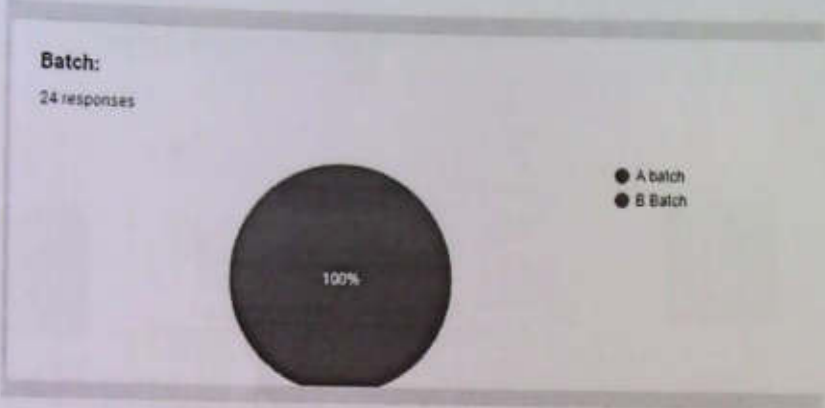
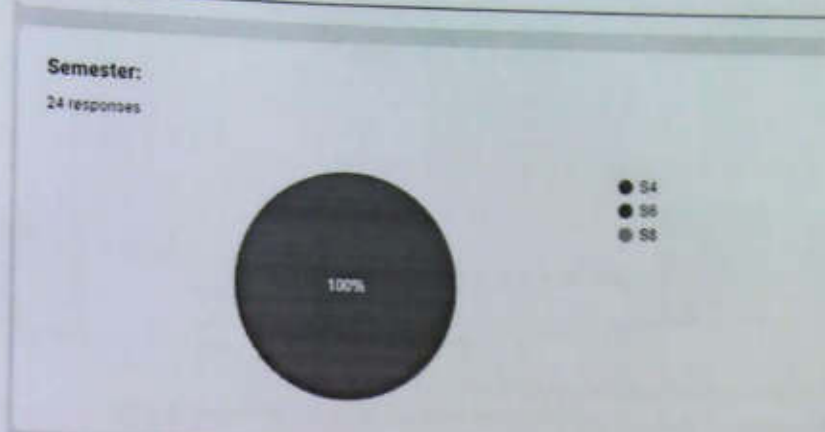
Conclusion:

The Industrial Robotics and Internet of Things program is a comprehensive introduction to the world of embedded systems and IoT. Participants gain a basic understanding of the components that make up an embedded system, and learn how to write code using Arduino and Python. The program emphasizes the development of problem-solving skills and practical solutions, and participants work in groups to design and implement simple embedded systems. By the end of the program, participants have a solid foundation in the concepts and principles of industrial robotics and IoT, and are equipped with the skills they need to take on more advanced projects in the future. All the portions were completed timely as per the syllabus.


APR/23


HOME, 20/02/23

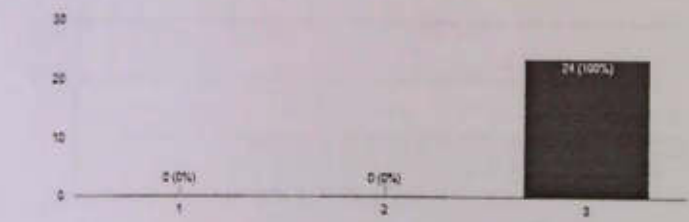
FEEDBACK CONSOLIDATED DETAILS



On a scale of 1 to 3 how do you rate the add-on course classes? Copy

1 - Poor
2 - Satisfactory
3 - Excellent

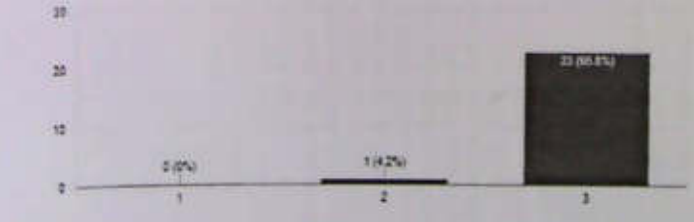
24 responses



The tools & techniques discussed during this event was relevant and met your curriculum gaps. (PO1, PO2, PO3, PO4, PO5,PO6,PO9,PO11,PO12,PSO1,PSO2) Copy

1 - Poor
2 - Satisfactory
3 - Excellent

24 responses

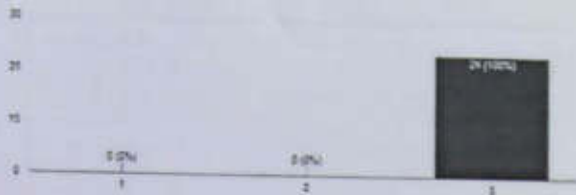


You got sufficient opportunity for exploring your creativity, technical skills and improving your design ideas on Industrial Robotics & Internet of Things (PO1, PO4, PO5, PO12, PSO1, PSO2);



- 1 - Poor
- 2 - Satisfactory
- 3 - Excellent

24 responses

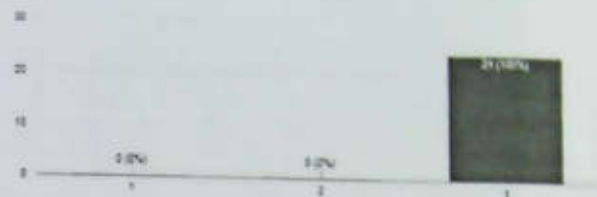


Were you able to perform effectively as an individual and as a team, and follow the instructions? (PO4, PO11, PO12);



- 1 - Poor
- 2 - Satisfactory
- 3 - Excellent

24 responses

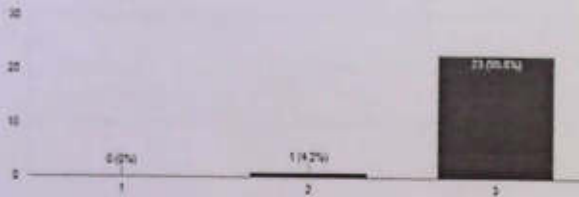


The tools & techniques helped you in designing and developing a demonstrable project, which can be used in mechanical based industrial sectors. (PO2,PO5, PO9,PO11,PO12, PSO1, PSO2);



- 1 - Poor
- 2 - Satisfactory
- 3 - Excellent

24 responses



Will the tools & techniques included in the add-on course able to contribute to the society, modern engineering and global requirements? (PO3, PO5, PO6, PSO1, PSO2);



- 1 - Poor
- 2 - Satisfactory
- 3 - Excellent

24 responses

