3. Design and development of Curriculum for Add-on/ certificate/ Diploma Courses

S.No	Name of Faculty	Name of Add-on Courses
1	Mr. Venkatesh C	Electric Vehicle
2	Mrs.Piriyadharshini S	IoT using Ardunio
3	Mr. Mohan S R	Introduction to Multibody Dynamics
4	Mr. Ashok Kumar M	Internet of Things IoT
5	Mrs. Gayathri A	Electric Vehicle
6	Mrs. Janaki V	Revit Architecture
7	Mr. Mohaideen Abdul Kadhar	Advanced python and introduction to machine learning
8	Mrs. Priyadharshini S	IoT using Arudino
9	Mr. Kamarajan M	VLSI
10	Mr. Sakthivel D	3D Printing
11	Mrs. Priya R	Robotic Process Automation

PRINCIPAL
MOHAMED SATHAK A.J.COLLEGE OF ENGINEERING
34, Rajiv Gandhi Road (OMR), Siruseri, IT Park
Chennai-603 103.

Department of Electrical and Electronics Engineering

Academic year: 2023-2024 ODD

Value Added Course – Electric Vehicle

MOHAMED SATHAK A J COLLEGE OF ENGINEERING, Chennai - 603103

CONSOLIDATED REPORT OF VALUE ADDED COURSES OFFERED FOR THE PERIOD OF ODD SEM 2023

Department of Electrical and Electronics Engineering

S.No	Name of the Course	Year	Sem	Period	No.of students		Faculty Incharge
					Enrolled	Qualified	
1	Electric Vehicle	IV	VII	August 2023 to November 2023	16		Mr. C. Venkatesh
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Course Co-ordinator

Sign of HoD with date

Head-Technology Centers

Format No :TLP 22

Rev.No: 1.0

Rev.Date : 04.01.21

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No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chenai - 603103.

B.E - ELECTRICAL AND ELECTRONICS ENGINEERING

REGULATION – 2017

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR VALUE ADDED COURSE

Sl. No	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1	EVA033	Electric Vehicles	EEC	2	2	0	0	2

Objectives:

- To present a comprehensive overview of Electric and Hybrid Electric Vehicles
- To study about the working of Electric Vehicle.
- To impart the knowledge on energy storage device.
- To learn electric vehicle drive systems.
- To understand the configuration of hybrid vehicles.

Unit I   Introduction to Electric Vehicle   6

Introduction - History of Electric Vehicle - Benefits of Electric Vehicle - Types and its challenges - Introduction to EV Motor Drives Technologies - EV Battery Charging Technologies - Electric Vehicle to Grid Connection – Regulation and Policy

Unit II   Electrical Drive and Controller   6

Types of DC and AC Motors – Selection of Motor – Torque and RPM Calculation – Motor Controlling Techniques – Function of Control Unit – Development Process – Hardware and Software Requirement.

Unit III   Electric Vehicle Drive Train Topologies   6

Introduction to Drive Train I topology in Electric Vehicle – Basic Concepts of Electric Traction – Power Flow Control – Breaking Systems – Gear and Clutch Arrangement.

Unit IV   Battery Management Systems   6

Need – Rule based Control and optimization base control – Software based High Level Supervisory control – Mode of Power – Behavior of Motor – Types of Battery – Characteristics.

Unit V   Hybrid Electric Vehicles   6

History – Importance of Hybrid Vehicle – Vehicle Performance – Power Source – Transmission Characteristics – Fuel Efficiency Analysis.

TOTAL: 30 PERIODS

Outcomes:

After completing this course, students should demonstrate competency in the following skills:

- Analysis the configuration and control methods of Electric Propulsion unit.
- Summarize the factors that control battery operational characteristics and the primary mechanisms.
- Describe the basic fundamentals and working principles of electrical machines.
- Analysis the transmission characteristics and mathematical models of Electric Vehicles.
- Discuss the energy management strategies used in hybrid and electric vehicles.

Text Books:

1. Iqbal Hussain, "Electric & Hybrid Vehicles – Design Fundamentals", Second Edition, CRC Press, 2011.
2. M. Ehsani, Y. Gao, S. Gay and A. Emadi, Modern Electric, Hybrid Electric, and Fuel CellVehicles, CRC Press, 2005.
3. T. Denton, "Electric and Hybrid Vehicles", Routledge, 2016.
4. C. Mi, M. A. Masrur and D. W. Gao, "Hybrid Electric Vehicles: Principles and Applications with Practical Perspectives", John Wiley & Sons, 2011.

Reference:

1. S. Onori, L. Serrao and G. Rizzoni, "Hybrid Electric Vehicles: Energy Management Strategies", Springer, 2015.
2. James Larminie, "Electric Vehicle Technology Explained", John Wiley & Sons, 2003.
3. Sandeep Dhameja, "Electric Vehicle Battery Systems", Newnes, 2000.

MOHAMED SATHAK A J COLLEGE OF ENGINEERING, Chennai - 603103

VALUE ADDED COURSE - COURSE CONTENT

Department of Electrical and Electronics Engineering

Class : IV/ VII			Academic Year:2023 - 24
Name of the Value Added Course	Electric Vehicles DESIGN	Name of the handling Faculty	Mr. C. Venkatesh

Course Objective
To present a comprehensive overview of Eectric and Hybrid Electric Vehices
To study about the working of Electric Vehicle
To impact the knowledge on energy storage devices
To learn electric vehicle drive systems
To understand the configuration of hybrid vehiclec

Course Outcome
After completing this course, students should demonstrate competency in the following skills:
Analysis the confuguration and control methods of Electric propulsion unit
Summarize the factors that control battery operational characteristics and the primary mechanisms
Describe the basic fundamentals and working principles of electric machines
Analysis the transmission characteristics and mathematical model of electric vehicles
Describe the energy management strategies used in hybrid and electric vehicles

Lesson Plan for VAC				
Sl. No.	Topic	T / R* Book	Periods Required	Mode of Teaching
	Unit -I Introduction to Electric Vehicle			
1	Introduction - History of Electric Vehicle	T1	1	BB
2	Benefits of Electric Vehicle - types and its challenges	T1	1	BB
3	Introduction to EV Motor drives technologies	T1	1	BB
4	EV battery charging technology	T2	1	BB
5	Electric vehicle to grid connection	T2	1	BB
6	Regulation and policy	T2	1	BB
	Unit -II Electric Drive and Controller			
7	Types of DC and AC motors - selection of motor	T1	1	BB
8	Torque and RPM calculation	T1	1	BB
9	Motor controlling techniques	T1	1	BB
10	Function of control unit	T1	1	BB
11	Development process	T1	1	BB
12	Hardware and software requirement	T1	1	BB

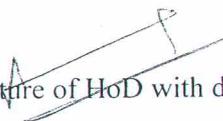# MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING, Chennai - 603103

VAC - STUDENTS NAME LIST

Department of Electrical and Electronics Engineering

Academic Year: 2023-2024

Name of the Value Added Course : Electric Vehicles (EVA033)				
Yr / Sem : 4th Year / 7th Sem		Faculty In-charge :	Chintala Venkatesh	
Location :		Duration :	30 Hrs	
Sl.No	Name of the Student	Register No.	Status of Qualifying	Sign of Student
1	ARSHAD.K	311820105001	YES	
2	DIVYASRI S	311820105003	YES	
3	HARISHANKAR.V	311820105004	YES	
4	IMRAN R	311820105005	YES	
5	MOHAMED RASITH	311820105006	YES	
6	SWETHA MARIA FAUSTINA.S	311820105009	YES	
7	SYED HARRUN	311820105010	YES	
8	THOUFIQ AHAMED	311820105011	YES	
9	THOWFIQ M	311820105012	YES	
10	MOHAMED FAZIL. M	311820105302	YES	
11	MOHAMED SAMEER. L	311820105303	YES	
12	MOHAMED YAHYA. A	311820105304	YES	
13	MUHAMMED IMRAN. K	311820105305	YES	
14	MUZAMMIL HAQ.	311820105306	YES	
15	SYED AFRIDI. P	311820105308	YES	
16	MOHAMED UNIAS	311820105701	YES	
17				
18				
19				
20				
21				
22				
23				
24				
25				

Head-Training

Signature of HoD with date

PRINCIPAL
Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chenai - 603103.

Anna University, Chennai
Office of the Controller of Examinations
Pre- Examination Monitoring System

Log out

| PROFILE | EXAM SCHEDULE | HTE PREVIEW | ASSESSMENT | CERTIFICATE | ELECTIVE | GRIEVANCE |

Print

Result for Nov. / Dec. Examination,2023

Register Number : 311820105701
Name : MOHAMED UNAIS A
Branch : B.E. Electrical and Electronics Engineering

Semester	Subject Code	Grade	Result
07	EE8701	B+	PASS
07	EE8702	A	PASS
07	EE8703	O	PASS
07	EE8711	O	PASS
07	EE8712	O	PASS
07	EVA033	B+	PASS
07	GE8077	A	PASS
07	OCS752	A	PASS
07	EE8059	O	PASS

Legends

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Sipcot - IT Highway Egattur,
Chenai - 603103.

Result for Nov. / Dec. Examination, 2023

Register Number : 311B20105012
Name : THOWFIQ M
Branch : B.E. Electrical and Electronics Engineering

Semester	Subject Code	Grade	Result
07	EE8701	B	PASS
07	EE8702	A	PASS
07	EE8703	B+	PASS
07	EE8711	O	PASS
07	EE8712	O	PASS
07	EVA055	B+	PASS
07	GE8077	B+	PASS
07	OCS752	B	PASS
07	SB8059	A+	PASS
06	EE8601	B	PASS

Legends

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Chenai - 603103.

Question Paper

B.E/B.TECH DEGREE INTERNAL ASSESSMENT TEST-I
Fifth Semester
Electrical and Electronics Engineering

EVA033 ELECTRIC VEHICLE

(Value Added Course)

Time: 1 Hour 30 Minutes   Answer ALL questions   Maximum: 50 marks

OBJECTIVES:
- To present a comprehensive overview of Electric and Hybrid Electric Vehicles.
- To study about the working of Electric Vehicle.
- To impart the knowledge on energy storage device.
- To learn electric vehicle drive systems.
- To understand the configuration of hybrid vehicle.

OUTCOMES:
After completing the course, students should demonstrate competency in the following skills:
- CO1: Analysis the configuration and control methods of electric propulsion unit.
- CO2: Summarize the factors that control battery operational characteristics and the primary mechanisms.
- CO3: Describe the basic fundamentals and working principles of electrical machines.
- CO4: Analysis the transmission characteristics and mathematical models of electric vehicles.
- CO5: Discuss the energy management strategies used in hybrid and electric vehicles.

PART-B (5 * 8 = 40 Marks)

1. Explain about the history of Electric Vehicle? (CO-1) (BTL-K1)
2. Write briefly about benefits of electric vehicle? (CO-1) (BTL-K1)
3. Discuss about the EV Battery Charging Technologies? (CO-1) (BTL-K2)
4. Classify the Types of AC Motors and DC Motors Explain it Briefly? (CO-2) (BTL-K2)
5. What are the methods to control the speed of DC motor? (CO-2) (BTL-K2)

PART-C (2 * 20 = 40)

6. Torque and RPM Calculation of the motor? (CO-2) (BTL-K2)
7. Explain and drive the Train 1 topology in Electric vehicle? (CO-3) (BTL-K1)

*****ALL THE BEST*****

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Question Paper

B.E/B.TECH DEGREE INTERNAL ASSESSMENT TEST-II
Fifth Semester
Electrical and Electronics Engineering

EVA033 ELECTRIC VEHICLE

(Value Added Course)

Time: 1 Hour 30 Minutes   Answer ALL questions   Maximum: 50 marks

OBJECTIVES:
- To present a comprehensive overview of Electric and Hybrid Electric Vehicles.
- To study about the working of Electric Vehicle.
- To impart the knowledge on energy storage device.
- To learn electric vehicle drive systems.
- To understand the configuration of hybrid vehicle.

OUTCOMES:
After completing the course, students should demonstrate competency in the following skills:
- CO1: Analysis the configuration and control methods of electric propulsion unit.
- CO2: Summarize the factors that control battery operational characteristics and the primary mechanisms.
- CO3: Describe the basic fundamentals and working principles of electrical machines.
- CO4: Analysis the transmission characteristics and mathematical models of electric vehicles.
- CO5: Discuss the energy management strategies used in hybrid and electric vehicles.

PART-B (5 * 8 = 40 Marks)

1. Explain Braking system and Gear & cultch arrangement (CO-3) (BTL-K2)
2. Explain of Rule based Control and optimization based control? (CO-4) (BTL-K2)
3. Explain the types of Battery and Characteristics? (CO-4) (BTL-K2)
4. Explain the software based high level supervisory control? (CO-4) (BTL-K2)
5. Explain the software based high level supervisory control? (CO-5) (BTL-K2)

PART-C (2 * 20 = 40)

6. What are the transmission characteristics of EV ? (CO-5) (BTL-K2)
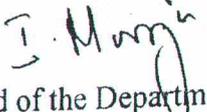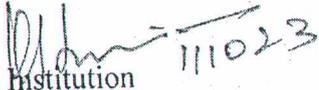7. What are the different types of hybrids? (CO-5) (BTL-K2)

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*****ALL THE BEST*****

APPLICATION FOR CONDUCTING VALUE ADDED COURSES

1. Name of the Department: B.E ELECTRONICS & COMMUNICATION ENGINEERING (REGULATIONS 2017)

2. UG programme : B.E

3. Details of the Value Added Courses:

a. Name of the Value Added Courses: IOT USING ARDUINO(Course Code IVA067)

b. Type of Value Added Courses : (Lab integrated theory)

c. Short Description : Enclosure 1 enclosed

d. Syllabus including Reference : Enclosure 2 enclosed - YES

4. Target audience:

Semester (indicate if more than one) : VIIth Semester only

Others

5. Details of Faculty handling the course:

a. Name of the Faculty handling the Value Added Course : Mrs.S.Piriyadharshini

b. Details including designation and expertise : Enclosure 3 enclosed - YES

c. Contact details

Email ID : ece.priyadharshini@msajce-edu.in

Phone No : 9489019459

6. Tentative Time Table including dates of internal assessments : Enclosure 4 enclosed - YES

7. Number of students opting for the course : 25

8. Department Consultative Committee - Minutes : Enclosure 5 enclosed - YES

9. Name and Designation of the Coordinator : Mr.M.Kamarajan,
Assistant Professor,
Department of ECE
Mohamed Sathak A J College of Engg.

Head of the Department
(With date & seal)

Head of the Institution   1|10.23
(With date & seal)

Additional Controller of Examinations

Director, Academic Courses

B.E ELECTRONICS AND COMMUNICATION ENGINEERING
(REGULATIONS 2017)
VALUE ADDED COURSE
DEPARTMENT CONSULTATIVE COMMITTEE – MINUTES OF THE MEETING

Date: 21.07.2023

As per the Regulations 2017, a department consultative committee is constituted to offer value added course for the 7th semester, B.EElectronics and communicationengineering students pursuing their studies at Mohamed Sathak A J College of Engineering (MSAJCE), Siruseri, Chennai. The following members were present for the meeting held on 20/07/2023 at Department of B.E Electronics and Communication Engineering, MSAJCE.

S.No.	Name & Designation	Member of Bodies	Signature
1.	Dr.I.Manju, Professor & Head/IQAC, MSAJCE.	Monitor the progress of the course	I Manju
2.	Mrs.B.Murugeshwari , Assistant Professor /ECE, MSAJCE	HoD/ECE	
3.	Mr.M.Kamarajan /ECE, MSAJCE	Coordinator	
4.	Mrs.S.Piriyadharshini/ECE, MSAJCE	Faculty handling the course	

The consultative committee has decided to offer IOT USING ARDUINO for the students since it is essential for them to acquire knowledge and work in core Industry. The committee recommends Mrs.S.Piriyadharshini, Assistant Professor handle the course and train the students in IOT USING ARDUINO. The curriculum & syllabus, internal assessment pattern and awarding of grades are discussed and passed on the meeting for approval. The consultative committee constituted for value added course has recommended to conduct the course as lab integrated theory and approved the same.
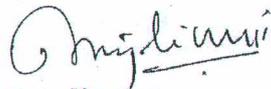
Coordinator

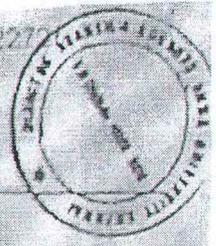Committee Chairperson

(Senior Faculty Member)

HoD/ ECE

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Chenai - 603103.
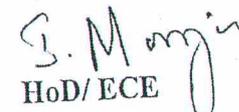
CENTRE FOR ACADEMIC COURSES
## ANNA UNIVERSITY

Dr. S.HOSIMIN THILAGAR
DIRECTOR
Letter No.

17.03.2021

To
The Controller of Examinations
Anna University

Sub: A.U – CAC – Affiliated Institutions – Value Added Courses – Reg.
Ref: (i) Letter No. MSAJCE/PC 021/2020-21, dated 09.02.2021
(ii) Mail received from the college, Mohamed Sathak A.J. College of
Engineering, dated 13.03.2021 and 14.03.2021
......

With reference to the letter cited above, course code is allotted for the Value Added Course as mentioned below:

SI. NO.	CODE ALLOTTED	TITLE	CREDITS			
			L	T	P	C
1	VA007	IOT using Arduino	1	0	2	2
2	VA018	Advanced Python and Introduction to Machine Learning	0	0	2	1

This is for your kind information and necessary action at your end.
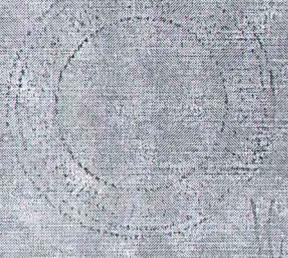
Yours faithfully

DIRECTOR

Copy to:
1. The Principal, Mohamed Sathak A.J. College of Engineering, Siruseri, Chennai 603 103
2. The Chairperson, Faculty of Information and Communication Engineering, A.U., Chennai -25
3. The Stock File.

PRINCIPAL
Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chennai - 603103.

To
Dr.Manju
Head ITC for

ECE 1.2.2

	Value Added Course on	L	T	P	C
Semester -6	**IOT USING ARDUINO**	1	0	2	2

Objectives:

- To expose student and gain knowledge about Arduino technology with IOT
- To Program and construct applications using Arduino using a number of different sensors and IOT

Unit – I Introduction to Arduino

Embedded processing portfolio, Architecture and hardware organization of Arduino, Configuring GPIO and Clock systems, Real time applications using GPIO configuration, LCD interfacing, Technical explanation ADC, Configuring ADC, Real time applications using Sensors

Unit – II Interfacing with Zigbee

Bluetooth Interfacing, Android mobile based device control ,GSM interfacing and send SMS, Real time Application Development with GSM ,Zigbee Interfacing, Data transmission using zigbee, Real time applications interfacing with sensors and Zigbee

Unit – III Real Time applications

DC Motor Interfacing, H-bridge concept and design and ultrasonic interfacing, Clockwise and anticlockwise control, Real time applications interfacing with robotic vehicle model, Real time applications interfacing with sensors and Robot

Unit – IV Li-Fi with Ardino

Introduction, Li-Fi based Data communication, Interfacing Li-Fi with Arduino, Application Development with Li-Fi.

Unit – V IOT –Configuration & Integration

Introduction to IoT & Scope of IoT, Web page creation, Data transmission from sensors, Configuration webpage ,Sensor data monitoring , Wireless Interfacing, Android mobile based device control, GSM interfacing and send SMS, Real time Application Development with GSM, Zigbee Interfacing Data transmission using zigbee, Real time applications interfacing with robotic vehicle.

Outcomes:

The students will be outfitted with hands on knowledge in IOT using ARDUINO.

Upon completion of the program, the students will be able to

C01	Understand features of the Arduino platform
C02	Application development-Integrate with Zigbee
C03	Study and execute real time applications
C04	Application development -Li-Fi with Ardino
C05	Execute coding to gather and process data on the Arduino via the cloud.

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Total Hours: 45

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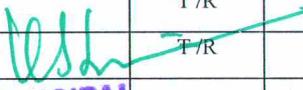
VALUE ADDED COURSE - COURSE CONTENT

Department of ECE

Class :IV ECE   Academic Year: 2023 TO 2024

Name of the Value Added Course	IVA067- IoT using Arduino	Name of the handling Faculty	S.Piriyadharshini

Course Objective
1) To expose student and gain knowledge about Arduino Technology wit IOT
2) To program and construct applications using Arduino using a number of different sensors and IOT

Course Outcome	
CO1	Understand features of Arduino Platform
CO2	Application Development - Integerate with Zigbee
CO3	Study and execute real time applications
CO4	Application Development - LiFi with Arduino
CO5	Execute coding to gether and process dataon the Ardunio via the cloud

Lesson Plan for VAC				
Sl. No.	Topic	T / R* Book	Periods Required	Mode of Teaching
	UNIT 1 - Introduction to Arduino			
1	Embedded processing portfolio	T /R	1	PPT
2	Architecture and hardware organization of Arduino	T /R	1	PPT
3	Configuring GPIO and Clock Systems	T /R	1	PPT
4	Real Time Applications using GPIO configuration	T /R	1	PPT
5	LCD Interfacing	T /R	1	PPT
6	Technical explanation ADC	T /R	1	PPT
7	Configuring ADC	T /R	1	PPT
8	Real time applications using sensors	T /R	1	PPT
	UNIT II - Interfacing with Zigbee			
9	Bluetooth Interfacing	T /R	1	PPT
12	Android mobile based device control	T /R	1	PPT
13	GSM Interfacing and send SMS	T /R	1	PPT
14	Real time Application Development with GSM	T /R	1	PPT
15	Zigbee Interfacing	T /R	1	PPT
16	Data transmission using zigbee	T /R	1	PPT
17	Real time application interfacing with sensors and Zigbee	T /R	2	PPT
18				
19	**UNIT III - Real Time Applications**			
20	DC Motor Interfacing	T /R	2	PPT/TOOL
21	H Bridge Concept and design and ultrasonic interfacing	T /R	1	PPT/TOOL
22	Clockwise and Anticlockwise control	T /R	1	PPT/TOOL
23	Real time Application interfacing with Robotic vehicle model	T /R	1	PPT/TOOL
24	Real time applications interfacing with sensors and Robot	T /R	1	PPT/TOOL
25				

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Mohamed Sathak A.J. College of Engineering
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Sipcot - IT Highway Egattur
Chenai - 603103.

IVA-067 IoT USING ARDUINO.

ATTENDANCE

S. No.	Register Number	Students Name
1	31182010EC001	Abinaya . K
2	6002	Abitha . B
3	6003	Afial Ahmed . M
4	6004	Ahmad Syed Seman . S
5	6005	Anudhusshwar . S
6	6006	Bashaathulla . K
7	6007	Carol Rosy . N
8	6009	Janani . M.E.
9	6010	Jasim Mohamed .
10	6011	Kishore . S
11	6013	Mathivanan . R
12	6014	Md. Mukshith . N
13	6016	Nirmal . K
14	6017	Poosathush Kumar . M
15	6018	Sajin . S
16	6020	Sathish Kumar . V
17	6021	Shaikh Jahabudeen . K
18	6022	Shaikabdulla . A
19	6025	Thanveer Sheriff . A
20	6301	Bala Krishnan . S
21	6302	Fowzia Jaleen . S.P
22	6303	Girish . R
23	6305	Kamali . D
24	6306	Mohamed Nayeem . B
25	6702	Kishon . R

No. of absentees

Signature of the faculty member

MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING.
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

DEPARTMENT OF ECE
IOT USING ARDUINO - PROJECT REVIEW

21/11/23.

S.no	Reg. No.	Name of the Students	PROJECT TITLE	PRESENTATION (30)	DEMONSTARTION (30)	RECORD (20)	VIVA (20)	TOTAL (100)
1.	311820106001	ABINAYA.K	Multipurpose Distance Measuring device.	28	25	20	16	89
	311820106002	ABITHA.B		27	24	20	15	86
	311820106007	CAROL PERSY.N		25	24	20	14	82
	311820106009	JANANI.M.E		25	24	20	14	83
2.	311820106022	SHAIK ABDULLA.A.S	Temperature Fan controller using ESP8266.	26	24	20	16	86
	311820106003	AFLAL AHAMED.A		25	24	20	14	83
	311820106016	NIRMAL.K		24	22	20	14	81
	311820106010	JASEEM MOHAMED.P		24	23	20	13	80
3.	311820106004	AHMAD SYED SEMAK	Smart water Level monitoring system.	25	26	28	15	84
	311820106021	SHAHRUKH FAKRDEEN		28	26	18	16	88
	311820106011	KISHORE.S		25	24	18	14	81
	311820106305	KAMALI.D		24	24	18	14	90
	311820106005	AMUDESHNARAN.S		25	24	18	14	81
4.	311820106020	SATHESH KUMAR	Iot based Home Automa-tion.	24	25	20	14	83
	311820106301	BALAKRISHNAN		22	26	20	15	83
	311820106025	THANVEER SHERIFF		22	20	20	13	75
	311820106702	KISHORE.R		21	20	20	13	74
5.	311820106006	BASHARATHULLA	Smart Door Lock System.	28	30	20	20	98
	311820106013	MADHIVANAN.R		25	25	20	16	86
	311820106018	SAFRIN.S		25	24	20	15	84
	311820106014	MUKSHITH.N		26	25	20	16	87
6.	311820106300	NAYEEM	Collision Avoidance and safety measures in Electric vehicle	27	30	20	19	96
	311820106307	POOSATHISH KUMAR		26	28	20	18	94
	311820106303	GIRISH		26	28	20	15	89
	311820106302	FOUZIA JABEEN		24	24	20	14	82

SUBJECT INCHARGE

HOD/ECE

MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

DEPARTMENT OF ECE

IOT USING ARDUINO- ASSESMENT I

IV YEAR

S.no	Reg. No.	Name of the Students	Marks (30)
1	311820106001	ABINAYA K	21
2	311820106002	ABITHA B	20
3	311820106003	AFLAL AHAMED M	28
4	311820106004	AHMAD SYED SEMAR	29
5	311820106005	AMUDESHWARAN S	28
6	311820106006	BASHARATHULLA A	21
7	311820106007	CAROL PERSY N	27
8	311820106009	JANANI E	23
9	311820106010	JASEEM MOHAMED P	27
10	311820106011	KISHORE S	29
11	311820106013	MADHIVANAN R	27
12	311820106014	MOHAMED MUKSHITH N	23
13	311820106016	NIRMAL K	27
14	311820106017	POOSATHISHKUMAR M	22
15	311820106018	SAFRIN S	20
16	311820106020	SATHESH KUMAR V	22
17	311820106021	SHAHRUKH FAKRUDEEN K	29
18	311820106022	SHAIK ABDULLA A	28
19	311820106025	THANVEER SHERIFF	21
20	311820106301	BALA KRISHNAN.S	22
21	311820106302	FOUZIA JABEEN S P	20
22	311820106303	GIRISH .R	22
23	311820106305	KAMALI.D	20
24	311820106306	MOHAMED NAYEEM B	21
25	311820106702	KISHORE.R	21

CLASS ADVISOR

PRINCIPAL
Mohamed Sathak A.J. College of Enginee
No.34, Rajiv Gandhi Salai (OMR)
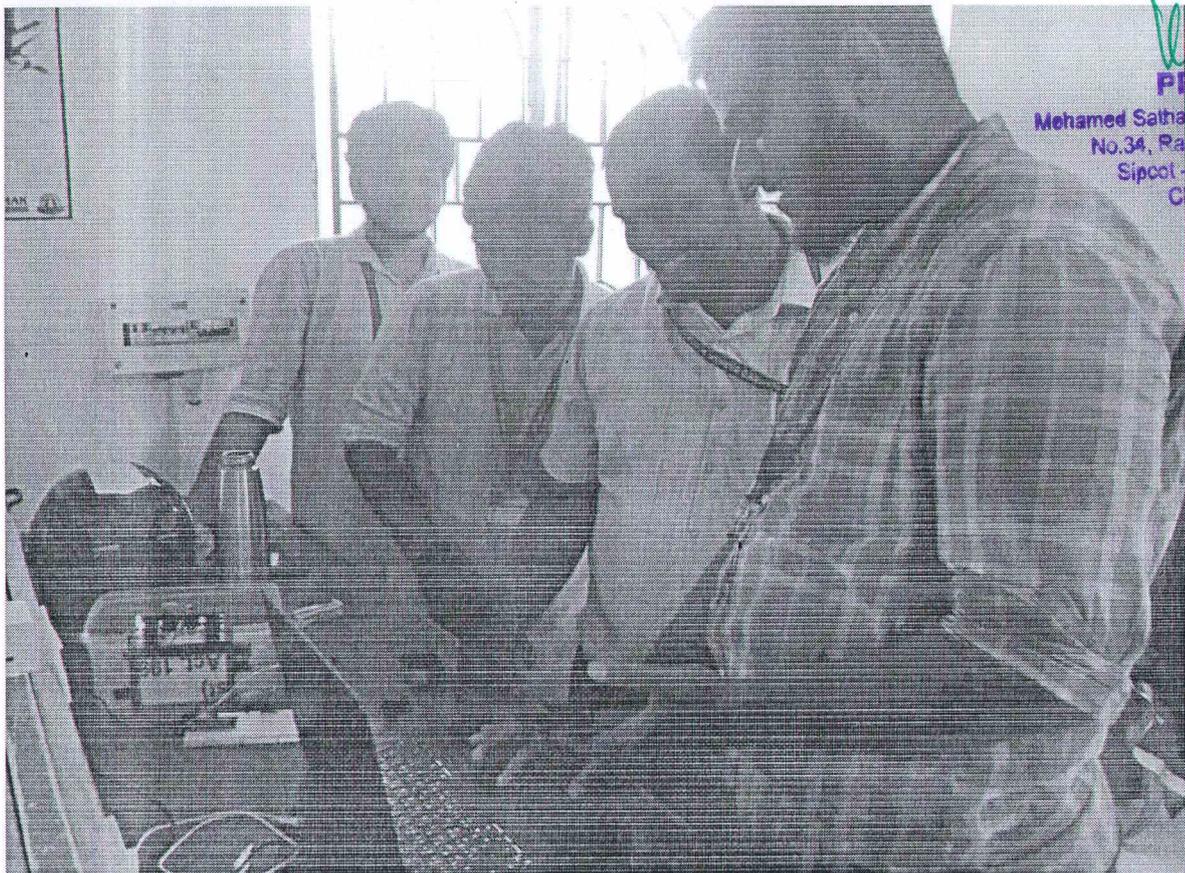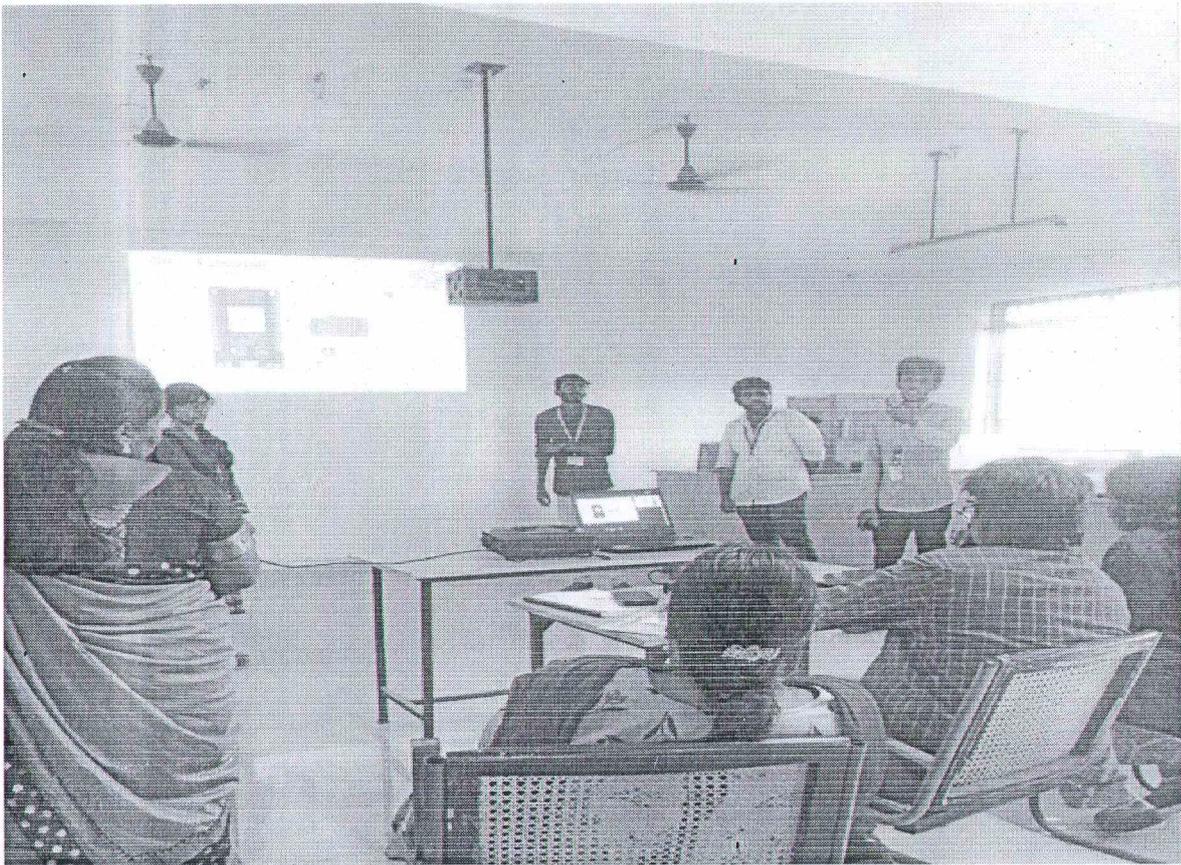Sipcot - IT Highway Egattur,
Chenai - 603103.

HOD/ECE
21/11/22

MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi, Affiliated & Anna University, Chennai)

DEPARTMENT OF ECE
IOT USING ARDUINO- ASSESMENT II
IV YEAR

S.no	Reg. No.	Name of the Students	Marks (25)
1	311820106001	ABINAYA K	21
2	311820106002	ABITHA B	17
3	311820106003	AFLAL AHAMED M	21
4	311820106004	AHMAD SYED SEMAR	AB
5	311820106005	AMUDESHWARAN S	AB
6	311820106006	BASHARATHULLA A	21
7	311820106007	CAROL PERSY N	20
8	311820106009	JANANI E	19
9	311820106010	JASEEM MOHAMED P	20
10	311820106011	KISHORE S	AB
11	311820106013	MADHIVANAN R	20
12	311820106014	MOHAMED MUKSHITH N	20
13	311820106016	NIRMAL K	20
14	311820106017	POOSATHISHKUMAR M	22
15	311820106018	SAFRIN S	22
16	311820106020	SATHESH KUMAR V	22
17	311820106021	SHAHRUKH FAKRUDEEN K	25
18	311820106022	SHAIK ABDULLA A	20
19	311820106025	THANVEER SHERIFF	21
20	311820106301	BALA KRISHNAN.S	22
21	311820106302	FOUZIA JABEEN S P	22
22	311820106303	GIRISH .R	22
23	311820106305	KAMALI.D	21
24	311820106306	MOHAMED NAYEEM B	22
25	311820106702	KISHORE.R	22

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Sipcot - IT Highway Egattur,
Chenai - 603103.

HOD/ECE
21/11/22

Name with Designation	:	S. Priyadharshini . AP/ECE.
Department	:	ECE.
Branch	:	BE.
Academic Year / Semester	:	2023 -2024.
Subject Code & Title	:	IVA067 IoT using Arduino
Type of Subject	:	Theory cum Practical / Practical ✓
Date of Reopening	:	24/7/23.
Last Working Day	:	17/11/23.
Total Allocated Periods	:	45
Total Conducted Periods	:	45.

Assessment Details

Assessment	Assessment Conducted on	No. of Students			Pass %	Remarks
		Total	Passed	Failed		
I	23/9/2023	25	25.	—	100%.	—
II.	17/10/2023	25	22	03.	88%.	3 students were absent

Class Timetable

Periods	1	2	3	4	5	6	7	8
Time								
Monday								
Tuesday			← VAC IoT →					
Wednesday								
Thursday								
Friday								

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Sipcot - IT Highway Egattur,
Chenai - 603103.
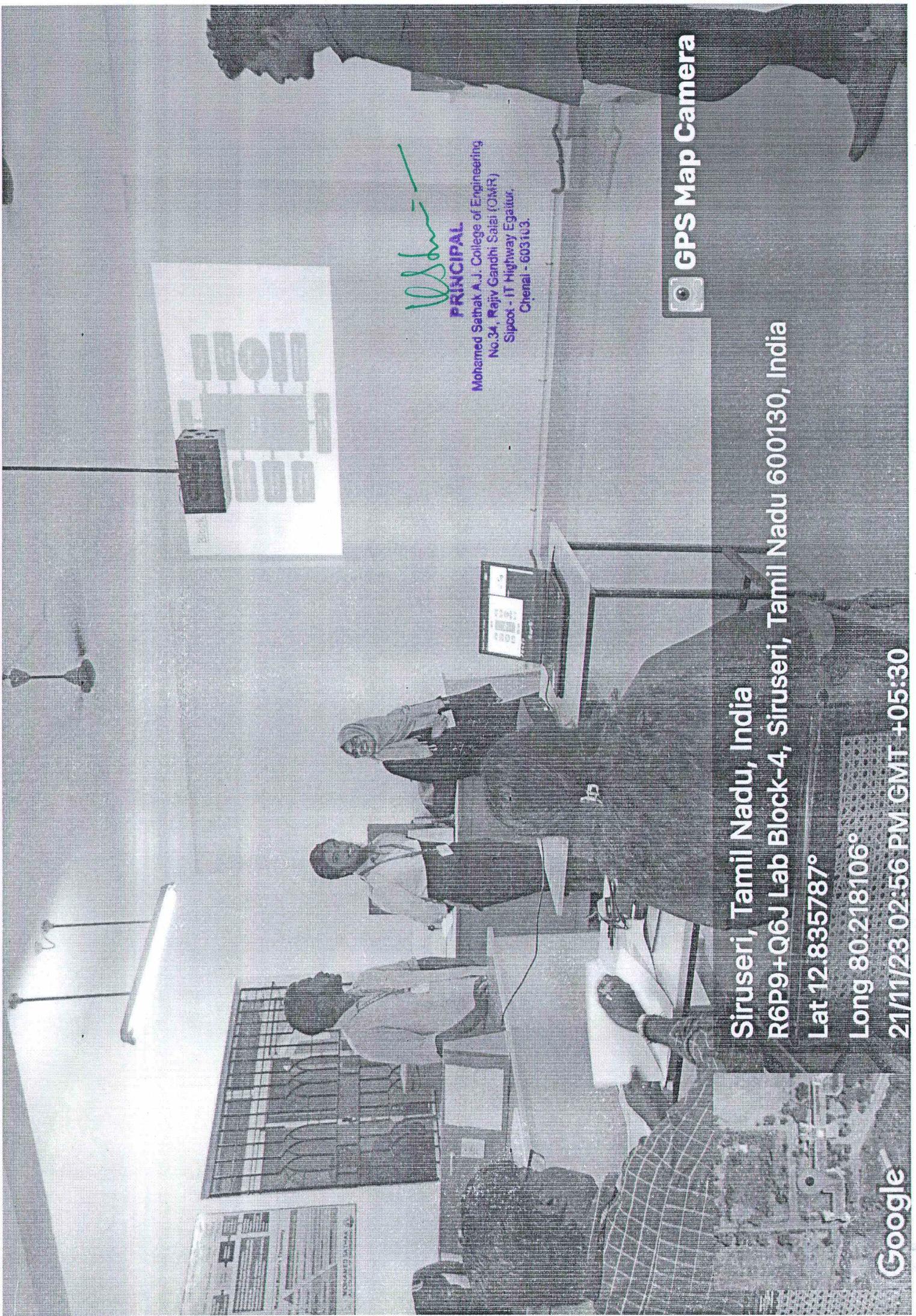
PRINCIPAL
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No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chenai - 603103.

Siruseri, Tamil Nadu, India
R6P9+Q6J Lab Block-4, Siruseri, Tamil Nadu 600130, India
Lat 12.835787°
Long 80.218106°
21/11/23 02:56 PM GMT +05:30

GPS Map Camera

ANNA UNIVERSITY :: CHENNAI - 600025.
OFFICE OF THE CONTROLLER OF EXAMINATIONS
Provisional Results of Nov. / Dec. Examination,2023.

Inst.Code/Name : 3118 - MOHAMMED SATHAK A.J.COLLEGE OF ENGINEERING   Semester No. : 07   DATE OF PUBLICATION :23-04-2024

Branch : 106-B.E. Electronics and Communication Engineering

Reg. Number	Stud. Name	EC8701	EC8702	EC8711	EC8751	EC8761	EC8791	IVA067	OMF751	SB056
	Subject Code ->	Grade	Grade	Grade	Grade	Grade	Grade	Grade	Grade	Grade
31181910 6001	AHAMED ALI H						U		B	
31181910 6012	MOHAMMED ASIF A						B			
31181910 6013	MOHAMMED TAHEER R	U					U			
31181910 6022	SYED AAKHIB MOHAMMED I	U								
31181910 6301	NAVINASH S	B					U			
31181910 6303	SALMAN S		B							
31182010 6001	ABINAYA K	B+	A	O	A	O	B	B	A	A+
31182010 6002	ABITHA B	B	A	O	B+	O	B	B	B+	A+
31182010 6003	AFLAL AHAMED M	B+	B+	A	B+	O	B	B	B+	A+
31182010 6004	AHMAD SYED SEMAR	B	B	A+	B	A+	U	B	B	A+
31182010 6005	AMUDESHWARAN S	B	U	A+	B+	A+	U	B	B+	A+
31182010 6006	BASHARATHULLA	B	U	A+	U	O	U	B+	A	O
31182010 6007	CAROL PERSY N	B	B	A+	U	A+	B	B	B+	A+
31182010 6009	JANANI M.E	B+	B	A+	B	A+	B+	B	B+	A+
31182010 6010	JASEEM MOHAMED P	B	B	B	B	B+	U	U	A	A
31182010 6011	KISHORE S	B	B	A+	B+	A+	B	B	B+	A+
31182010 6013	MADHIVANAN R	B	B+	A+	B+	A+	B	B	A	O
31182010 6014	MOHAMED MUKSHITH N	B+	B	A+	B+	O	U	B+	A	O
31182010 6016	NIRMAL K	B+	B+	B+	B	A	B	B	B+	A+
31182010 6017	POOSATHISH KUMAR M	B	B	A+	B	O	B	B	A	A+
31182010 6018	SAFRIN S	B	B	A+	B+	A+	B	B	B+	A+
31182010 6020	SATHESH KUMAR V	B+	A	O	B	O	B+	B	B+	O
31182010 6021	SHAHRUKH FAKRUDEEN K	B	B+	O	B	O	B	B	A+	O
31182010 6022	SHAIK ABDULLA A S	U	B	O	B	O	U	B	B	A+
31182010 6025	THANVEER SHERIFF A	U	B	B	U	A	U	B	U	A
31182010 6301	BALAKRISHNAN S	U	UA	B	U	B+	U	U	U	A
31182010 6302	FOUZIA JABEEN S P	B	B	B	U	A+	U	B	B+	A+
31182010 6303	GIRISH R	U	B	B	U	A	U	B	B+	A+
31182010 6305	KAMALI D	U	U	A+	U	A+	U	B	A	A+
31182010 6306	MOHAMED NAYEEM B	U	U	O	U	O	B	B+	A	O
31182010 6702	KISHORE R	U	U	B	U	B+	U	B	A	A

W - Withdrawal   I - Inadequate Attendance

PRINCIPAL
Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR),
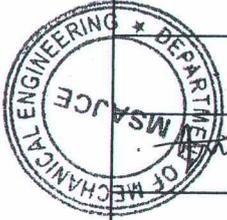Sipcot - IT Highway Egattur,
Chenai - 603103.

23-04-2024

MOHAMED SATHAK A J COLLEGE OF ENGINEERING, Chennai - 603103

VALUE ADDED COURSE - COURSE CONTENT

Department of Mechanical Engineering

Class : IV Year/ VII Semester   Academic Year: 2023-24

Name of the Value Added Course	MVA022 Introduction to Multibody Dynamics	Name of the handling Faculty	Mr. Mohan S R

Course Objective

The Students will acquire to
- To present the basic theoretical knowledge of the Foundations of Multi body dynamics
- To apply the knowledge of the applications to machine and structural dynamics.
- To analyze the static and dynamic behaviour of the multi body dynamics.
- To derive the motion equation of the bodies.
- To gain the concept of motion mechanics related to applications of MBD.
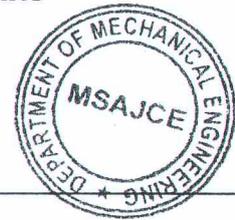
Course Outcome

Upon completion of the course,

1. Write programs to solve constrained differential equations for systems analyzing multi-body
2. Simulate and analyze all types of static behaviours of the multi-body systems including the kineto- static analysis.
3. Simulate and analyze all types of dynamic behaviours of the multi-body systems including the kineto-static analysis.
4. To derive equations of motion for interconnected bodies in multi-body systems with three-dimensional motion.
5. To Implement and analyze methods of formulating equations of motion for Inter-connected bodies.

	Lesson Plan for VAC			
Sl. No.	Topic	T / R* Book	Periods Required	Mode of Teaching
1	The method of constraints for planar kinematic analysis	T	1	PPT & BB
2	Revolute, prismatic, gear and cam pairs are considered together with other 2 DOF	T	2	PPT & BB
3	Introduction to Basic principles for analysis of multi-body systems	T	1	PPT & BB
4	The automatic assembly of the systems of equations for position	T	2	PPT & BB
5	The principle of virtual work and Lagrange's equations	T	1	PPT & BB
6	Introduction to Dynamies of Planar Systems	T	1	PPT & BB
7	Systematic computation and assembly of mass matrix	T	2	PPT & BB
8	Computation of planar generalized forces for external forces and for actuator-spring-damper element	T	1	PPT & BB
9	Simple applications of inverse and forward dynamic analysis	T	2	PPT & BB
10	Numerical integration of first-order initial value problems	T	1	PPT & BB

11	The method of Baumgarte for the solution of mixed differential-algebraic equations of motion	T	2	PPT & BB
12	The use of coordinates partitioning, QR and SVD decomposition for the orthogonalization of constraints	T	2	PPT & BB
13	Reference frames for the location of a body in space	T	1	PPT & BB
14	Euler angles and Euler parameters	T	2	PPT & BB
15	Kinematic analysis of spatial systems	T	2	PPT & BB
16	Equations of motion of constrained spatial systems	T	2	PPT & BB
17	Exercise	T	5	PPT & BB

Quiz / Mini Projects / Model Develpoed if any
NIL

Text / Reference Books	
1	De Jalo n, J.C., Bayo, E.,"Kinematic and Dynamic Simulation of Multibody Systems", Springer- Verlag,1994.
2	Kane, T.R, Levinson, D.A., "Dynamics: Theory and Applications", McGraw-Hill Book Co., 1985.

Website / URL References	
1	https://www.youtube.com/watch?v=1Tyxgv7RUdk
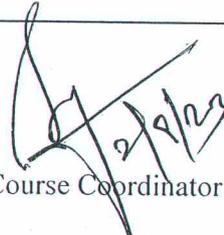
Sign. of Course Coordinator
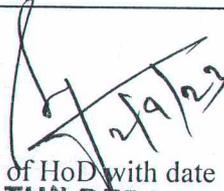
Sign. of HoD with date

HEAD OF THE DEPARTMENT
Department of Mechanical Engineering
Mohamed Sathak A.J. college of Engineering
Siruseri IT Park, Chennai - 603103.
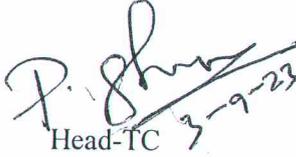
Head-TC

Format No.: TLP 21   Rev. No.: 1.0   Rev. Date:04.01.21

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Sipcot - IT Highway Egattur,
Chenai - 603103.

MOHAMED SATHAK A J COLLEGE OF ENGINEERING

Anna University - Value Added Course

MVA022 Introduction to Multibody Dynamics

<u>Course Registration</u>

AY 2023-24   IV Year / VII Semester

S.No	Reg.No	Student Name	Signature
1	311820114001	ABUTHAGIR. J	
2	311820114002	ARUN. T	
3	311820114003	DINESH. M	
4	311820114004	IMTHIYAS. A	
5	311820114005	MANIKANDAN. K	
6	311820114006	MOHAMED AFROSE. M	
7	311820114007	MOHAMED AJMAL A.R	
8	311820114008	MOHAMED GHOUSE NAGUTHA. M	
9	311820114009	MOHAMED IJAZ. M	
10	311820114010	MOHAMED ILIYAS.S	
11	311820114011	MOHAMED ISMAIL. A	
12	311820114012	MOHAMED SATHAKKATHULLAH. M	
13	311820114013	MOHAMMED MANSOOR. S	
14	311820114014	SADHAM HUSSAIN J	
15	311820114015	SALMAN. S	
16	311820114016	SHAIK YAHOPE. B	
17	311820114017	SYED MOHAMMED SUFIYAN. S	
18	311820114018	UMAR JAFFAR ALI A	
19	311820114302	FATHEEN AHMED.M	
20	311820114303	HARIHARAN J	

PRINCIPAL
Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chenai - 603103.

S.No	Register Number	Name	Signature
21	311820114304	HASAN HAFEL K	
22	311820114306	KISHORE P	
23	311820114307	MOHAMED ANAS.M	
24	311820114308	MOHAMED ANSAR ALI .N	
25	311820114309	MOHAMED ASIF M	
26	311820114311	MOHAMED MUFEED H	
27	311820114313	MOHAMED YASIR S A	
28	311820114314	MOHAMED THAISEER S	
29	311820114315	MOHAMED YUSUF A	
30	311820114316	MOHANRAJ.R	
31	311820114317	MOHIDEEN AGIL ZUBAIR S	
32	311820114318	PRABHU K	
33	311820114319	SAHUBAR SATHIK N	
34	311820114320	SRIRAM.N	
35	311820114321	VASANTHA KUMAR. N	
36	311820114322	VIJAY S	
37	311820114323	YUVAN SAI V N	
38	311820114701	TAHA MAFAAZ AHMED M	

HOD/MECH
HEAD OF THE DEPARTMENT
Department of Mechanical Engineering
Mohamed Sathak A.J. College of Engineering
Siruseri IT Park, Chennai - 603103.

PRINCIPAL
Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chenai - 603103.

MSAJCE
DEPARTMENT OF MECHANICAL ENGINEERING

MOHAMED SATHAK A J COLLEGE OF ENGINEERING
Anna University Examinations Nov/Dec 2023
Department of Mechanical Engineering
MVA022 Introduction to Multibody Dynamics
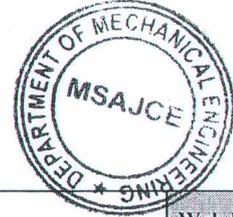
Sem: IV / VII

S.No	Reg.No	Student Name	Assesment -1		Assesment -2		Web Portal Entry
			Present / Absent	Marks (100)	Present / Absent	Marks (100)	Marks (100)
1	311820114001	ABUTHAGIR. J	P	91	P	82	87
2	311820114002	ARUN. T	P	92	P	90	91
3	311820114003	DINESH. M	P	90	P	82	86
4	311820114004	IMTHIYAS. A	P	90	P	84	87
5	311820114005	MANIKANDAN. K	P	91	P	85	88
6	311820114006	MOHAMED AFROSE. M	P	92	P	85	89
7	311820114007	MOHAMED AJMAL A.R	P	90	P	82	86
8	311820114008	MOHAMED GHOUSE NAGUTHA. M	P	90	P	88	89
9	311820114009	MOHAMED IJAZ. M	P	90	P	90	90
10	311820114010	MOHAMED ILIYAS.S	P	82	P	88	85
11	311820114011	MOHAMED ISMAIL. A	P	90	P	85	88
12	311820114012	MOHAMED SATHAKKATHULLAH. M	P	82	P	88	85
13	311820114013	MOHAMMED MANSOOR. S	P	90	P	90	90
14	311820114014	SADHAM HUSSAIN J	P	90	P	88	89
15	311820114015	SALMAN. S	P	92	P	90	91
16	311820114016	SHAIK YAHOPE. B	P	91	P	90	91
17	311820114017	SYED MOHAMMED.SUFIYAN. S	P	92	P	84	88
18	311820114018	UMAR JAFFAR ALI A	P	92	P	94	93
19	311820114302	FATHEEN AHMED.M	P	92	P	90	91
20	311820114303	HARIHARAN J	P	92	P	90	91
21	311820114304	HASAN HAFFIL K	P	91	P	84	88
22	311820114306	KISHORE P	P	90	P	92	91
23	311820114307	MOHAMED ANAS.M	P	90	P	80	85
24	311820114308	MOHAMED ANSAR ALI .N	P	90	P	81	86
25	311820114309	MOHAMED ASIF M	P	90	P	90	90
26	311820114311	MOHAMED MUFEED H	P	90	P	88	89
27	311820114313	MOHAMED YASIR S A	P	90	P	87	89

PRINCIPAL
Mohamed Sathak A.J. College of Engineering
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Chenai - 603103.

| S.No | Reg.No | Student Name | Assesment -1 | | Assesment -2 | | Web Portal Entry |
			Present / Absent	Marks (100)	Present / Absent	Marks (100)	Marks (100)
28	311820114314	MOHAMED THAISEER S	P	85	P	85	85
29	311820114315	MOHAMED YUSUF A	P	92	P	80	86
30	311820114316	MOHANRAJ.R	P	91	P	90	91
31	311820114317	MOHIDEEN AGIL ZUBAIR S	P	90	P	85	88
32	311820114318	PRABHU K	P	91	P	78	85
33	311820114319	SAHUBAR SATHIK N	P	90	P	75	83
34	311820114320	SRIRAM.N	P	91	P	86	89
35	311820114321	VASANTHA KUMAR. N	P	92	P	92	92
36	311820114322	VIJAY S	P	91	P	85	88
37	311820114323	YUVAN SAI V N	P	90	P	86	88
38	311820114701	TAHA MAFAAZ AHMED M	P	90	P	87	89

Faculty Incharge 23/11/23
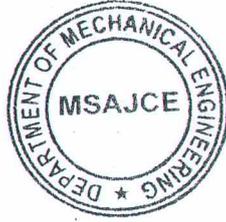
HOD/Mech 23/11/23

HEAD OF THE DEPARTMENT
Department of Mechanical Engineering
Mohamed Sathak A.J. college of Engineering
Siruseri IT Park, Chennai - 603103.

PRINCIPAL
Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chenai - 603103.

# MOHAMED SATHAK A J COLLEGE OF ENGINEERING
B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC.-2023
Regulation – 2017
Seventh Semester – B.E Mechanical Engineering
Assessment - I
MVA022 Introduction to Multi Body Dynamics
### (Value Added Course)
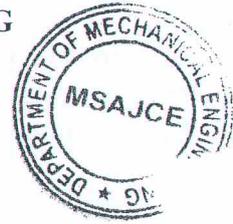
Marks : 100

Time : 3 Hrs

Answer All Questions

Part A (20×1=20 marks)

1. If we place some coins over the paper strip and pull it with a jerk, then coins don't fall off because of

   A. friction
   B. inertia
   C. resistance
   D. force

2. As weight is a force so it is a

   A. scalar quantity
   B. fixed quantity
   C. variable quantity
   D. vector quantity

3. The ratio of the force of limiting friction to normal reaction is

   A. zero
   B. constant
   C. greater than 1
   D. less than 2

4. The force that produces an acceleration of 1 ms^{-2} in a body of the mass of 1 kg is called
   A. slow newton
   B. zero newton
   C. one newton
   D. two newtons

5. When a net force act on a body, it produces acceleration in the body in the direction of the net force which is directly proportional to the net force acting on the body and inversely proportional to its mass. This statement is called

   A. newton's 2nd law of motion
   B. newton's 1st law of motion

1

12. The total number of instantaneous centers for a mechanism consisting of n links are

   A. n/2
   B. n
   C. n-1
   D. n(n-1)/2

13. Which of the following property of the instantaneous center is correct?

   A. A rigid link rotates instantaneously relative to another link at the instantaneous centre for the configuration of the mechanism considered.
   B. The two rigid links have no linear velocity relative to each other at the instantaneous centre.
   C. The velocity of the instantaneous centre relative to any third link is same whether the instantaneous centre is regarded as a point on the first link or on the second rigid link.
   D. all of the mentioned

14. The instantaneous centers which vary with the configuration of mechanism, are called

   A. permanent instantaneous centers
   B. fixed instantaneous centers
   C. neither fixed nor permanent instantaneous centers
   D. none of the mentioned

15. When two links are connected by a pin joint, their instantaneous centre lies

   A. on their point of contact
   B. at the centre of curvature
   C. at the centre of circle
   D. at the pin joint

16. A slider moving on a fixed link having constant radius of curvature will have its instantaneous centre at the center of the circle.

   A. True
   B. False

17. When the two elements of a pair have _____ when in motion, it is said to a lower pair.

   A. line or point contact
   B. surface contact
   C. permit relative motion
   D. none of the mentioned

Answer All Questions

Part C (2×20=40 marks)

26. Draw the assembly of spur gears;

        Driven gear teeth:120 and dia 12 in.

        Driving gear teeth: 40 and dia 4 in.

        Pitch angle: 20

        Thickness: 1.5 in.

        speed: 150 rpm

27. Trace the path for the following link mechanism.
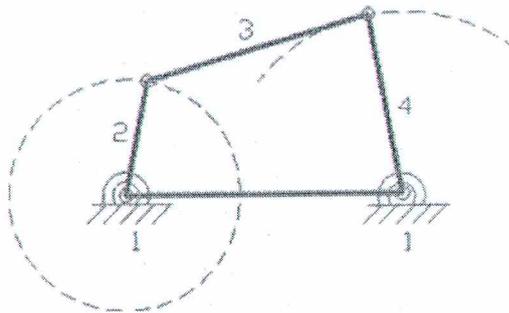
        L1 = 800 mm

        L2 = 200 mm

        L3 = 480 mm

        L4 = 560 mm

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B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC.-2023
Regulation – 2017
Seventh Semester – B.E Mechanical Engineering
Assessment - II
MVA022 Introduction to Multi Body Dynamics
(Value Added Course)
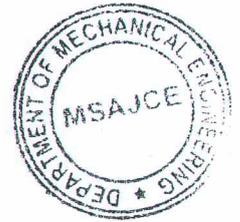
Marks : 100

Time : 3 Hrs

Answer All Questions

Part A (20×1=20 marks)

1. The two elements of a pair are said to form a _____ when they permit relative motion between them.

    a) open pair
    b) kinematic pair
    c) higher pair
    d) lower pair

2. A combination of kinematic pairs, joined in such a way that the relative motion between the links is completely constrained, is called a

    a) structure
    b) mechanism
    c) kinematic chain
    d) inversion

3. The relation between number of pairs(p) forming a kinematic chain and the number of links(l) is

    a) $l = 2p - 2$
    b) $l = 2p - 3$
    c) $l = 2p - 4$
    d) $l = 2p - 5$

4. The relation between number of links(l) and number of joints(j) in a kinematic chain is

    a) $l = 1/2 \ (j+2)$
    b) $l = 2/3 \ (j+2)$
    c) $l = 3/4 \ (j+2)$
    d) $l = j+4$

5. The relation $l = 2/3(j+2)$ apply to kinematic chains in which lower pairs are used. This may be used to kinematic chains in which higher pairs are used, but each higher pair may be taken as equivalent to

    a) one lower pair and two additional links

11. The given figure is a velocity time diagram for which of the follower motion?
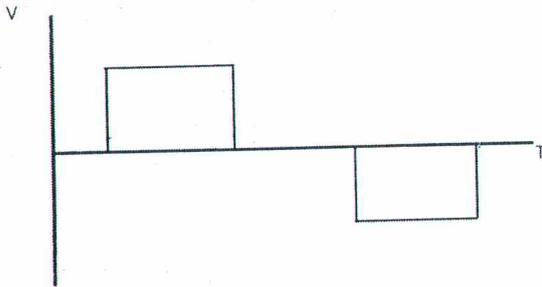
 a) Simple harmonic
 b) Uniform acceleration
 c) Uniform velocity
 d) Uniform retardation

12. If a follower is undergoing simple harmonic motion, then at what value of angle of ascent the acceleration is maximum?

 a) 0
 b) 30
 c) 45
 d) 60

13. If all the masses are in one plane, then what is the maximum no. of masses which can be placed in the same plane?

 a) 3
 b) 4
 c) 6
 d) No limitation

14. If the rotation speed of the shaft increases then the balancing mass must also increase.

 a) True
 b) False

15. The type of pair formed by two elements which are so connected that one is constrained to turn or revolve about a fixed axis of another element is known as

 a) turning pair
 b) rolling pair
 c) sliding pair
 d) spherical pair

16. Which of the following is a lower pair

 a) ball and socket i

3

Answer All Questions

Part C (2×20=40 marks)

26. Draw the assembly of spur gears;

       Driven gear teeth:40 and dia 10cm.

       Driving gear teeth: 40 and dia 10cm.

       Pitch angle: 20

       Thickness: 2cm.

       speed: 55 rpm

27. Draw the cam follower mechanism in multibody dynamic software.
    (Use suitable dimensions)
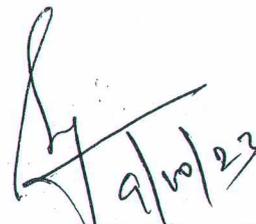
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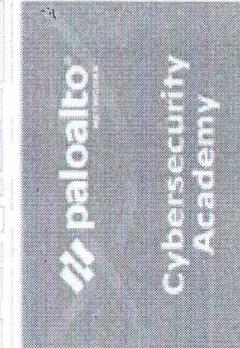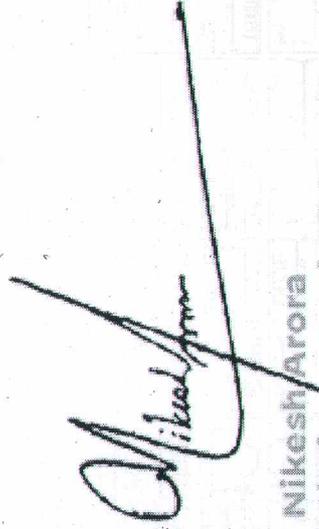Palo Alto Networks

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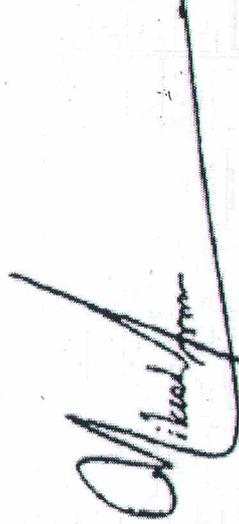
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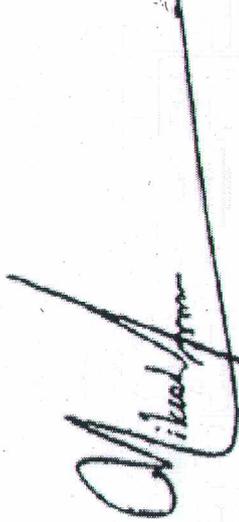
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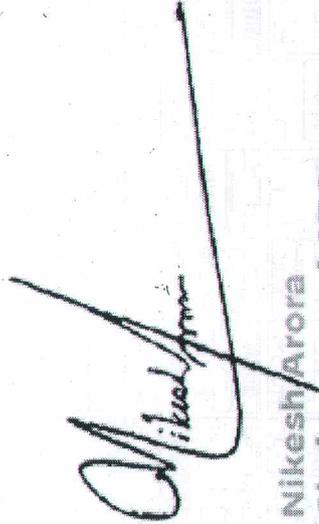
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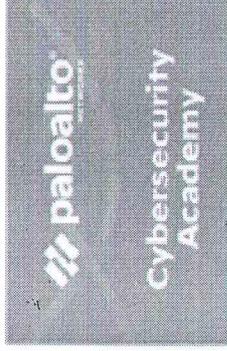Sipcot - IT Highway Egattur,
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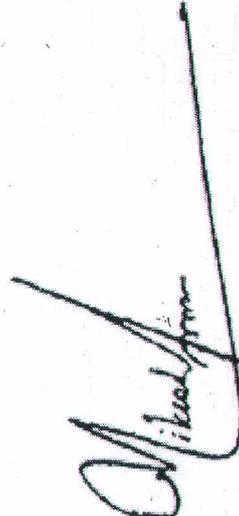Nikesh Arora
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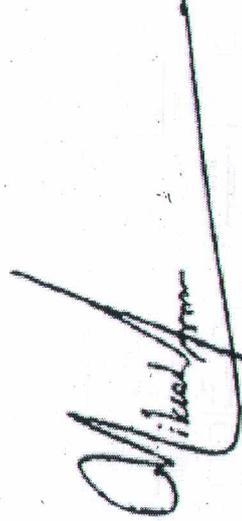Validation URL

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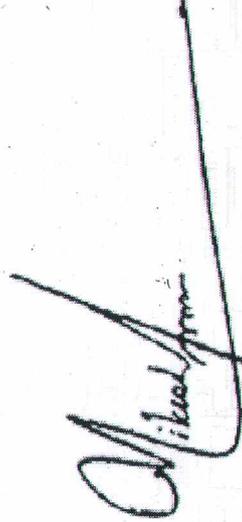# Cybersecurity Academy

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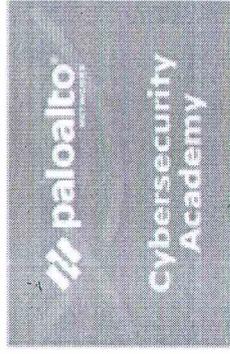Chairman and CEO
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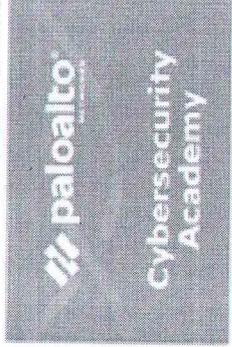
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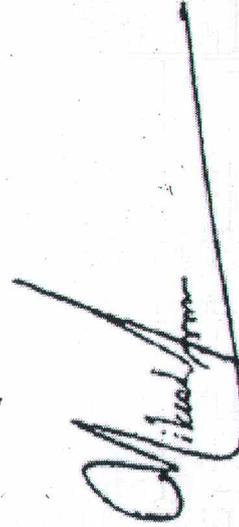### Student Certificate of Completion

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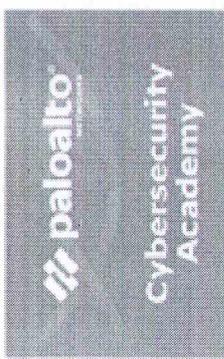Sipcot - IT Highway Egattur,
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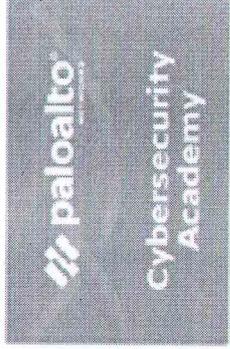Palo Alto Networks

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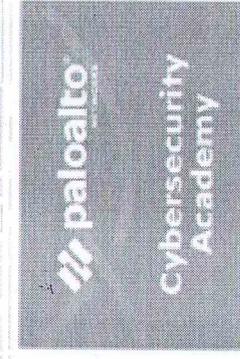
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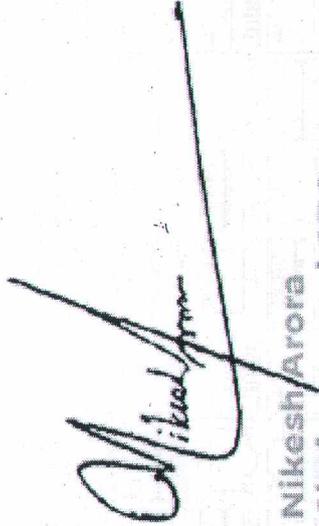Validation URL

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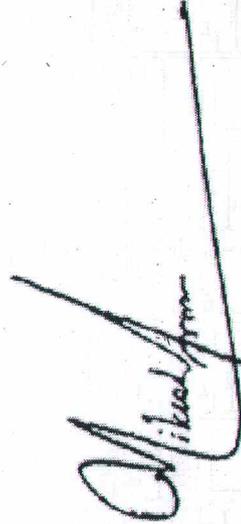Palo Alto Networks

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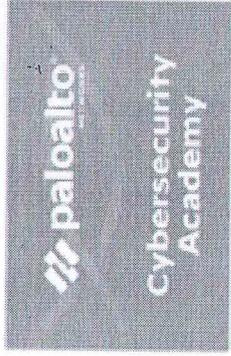
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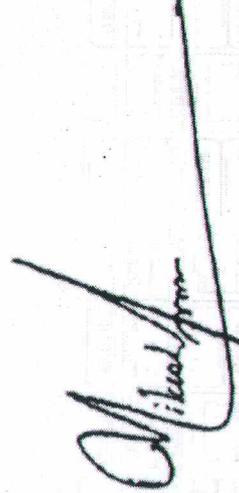
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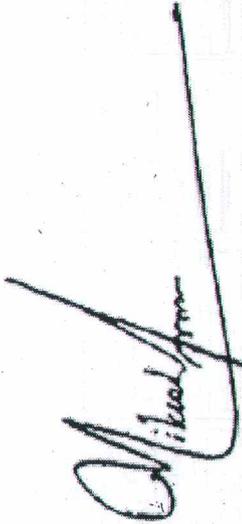Validation URL

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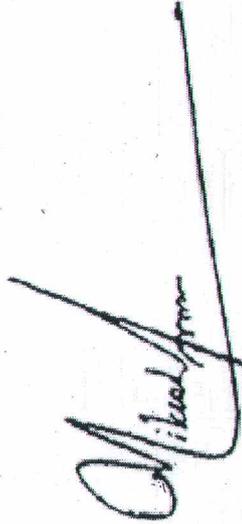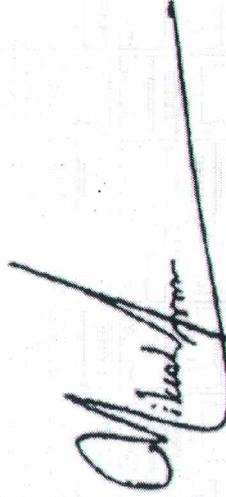## Student Certificate of Completion

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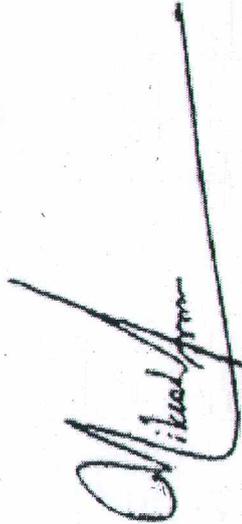
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varshini maheshkumar

has successfully completed

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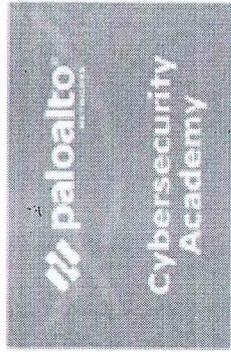Authorization Number

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MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Department of Electronics and Communication Engineering

Technology Centre for E-yantra: Embedded & Robotics

Student Namelist – Academic Year:2023-2024

1.2.2

ECE TCC

Course Name: Internet of Things (IoT)

S. No	Name of the Student	Department
1.	Sulaiman H	CSE
2.	Yazar Arafath A	CSE
3.	Hassan	CSE
4.	Muhasin Ahamed A	IT
5.	Rakshita R	IT
6.	Abubacker Sideeq SM	IT
7.	Afsal.I	IT
8.	Dhanush Adithya S	MECH
9.	Udhayakumar.G	MECH
10.	Abinaya V	ECE
11.	Abdul Baasit A	ECE
12.	Mohamed Yahya N.I	ECE
13.	Kishore.D	ECE
14.	Sahul hameed T	ECE
15.	Dhinesh.C	ECE
16.	J.Jayasudhan	ECE
17.	Anish kumar.K	ECE
18.	Gopi.K	ECE
19.	Gajendiran.R	ECE
20.	Maheswaran.R	ECE
21.	Karthikeyan.S	ECE
22.	Majithul Hikkum	ECE
23.	Sarfan S.A	EEE
24.	Thiyagu.A	EEE
25.	Karthick.A	EEE
26.	Santhosh Kumar V	EEE

|	Internet of Things (ACY 2023-2024 ODD)			
	STUDENTS NAME LIST			
S.No	Register No	Name of Student	Year/Sem	Status of completion
1	311821106002	Abinaya V	III/V	Qualified
2	311821106016	R Maheswaran	III/V	Qualified
3	311821106001	A.Abdul Baasit	III/V	Qualified
4	311821106019	N.I Mohamed Yahya	III/V	Qualified
5	311821106015	Kishore.D	III/V	Qualified
6	311821106304	Sahul Hameed T	III/V	Qualified
7	311821106008	Dhinesh.C	III/V	Qualified
8	311821106014	J.Jayasudhan	III/V	Qualified
9	311821106003	K.Anish kumar	III/V	Qualified
10	311821106303	Karthikeyan.S	III/V	Qualified
11	311821106018	Majithul Hikkum.N.A	III/V	Qualified
12	311821106009	R.Gajendiran	III/V	Qualified
13	311821106010	Gopi.K	III/V	Qualified

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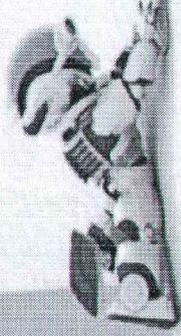
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This is to certify that Mr. / Ms _____ Abinaya V III ECE _____ student of Mohamed Sathak A J College of Engineering, Chennai has successfully Completed the Technology Centre Course on" Foundation of IoT " from 02nd August 2023 to 25th October 2023 Conducted by Centre for E-yantra: Embedded and Robotics, Department of Electronics and communication engineering.

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Principal

Dr. I. Manju
Head - IQAC & HoD/ECE

Mr.M.Ashok kumar
Course coordinator

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This is to certify that Mr. / Ms _____ Sahulhameed.T   III ECE _____ student of Mohamed Sathak A J College of Engineering, Chennai has successfully Completed the Technology Centre Course on" Foundation of IoT " from 02nd August 2023 to 25th October 2023 Conducted by Centre for E-yantra: Embedded and Robotics, Department of Electronics and communication engineering.

Mr.M.Ashok kumar
Course coordinator

7. Manju
Dr. I. Manju
Head - IQAC & HoD/ECE

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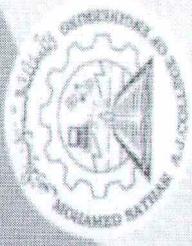
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Course coordinator

Dr. I. Manju
Head - IQAC & HoD/ECE

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CII

MOHAMED SATHAK
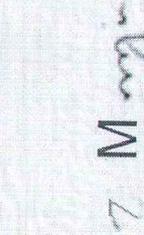## A.J. COLLEGE OF ENGINEERING

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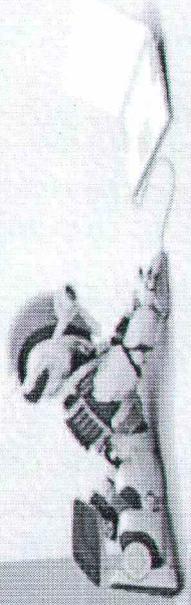Sipcot - IT Highway Egattur,
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Mr.M.Ashok kumar
Course coordinator

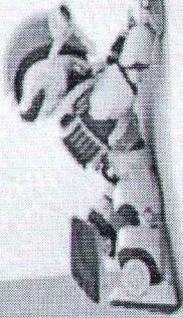**Dr. I. Manju**
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Course coordinator

Dr. I.Manju
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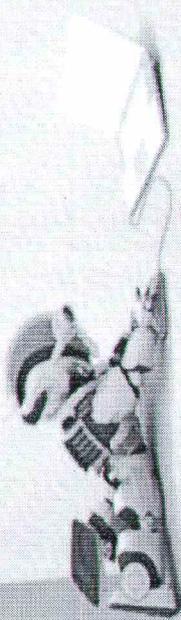Sipcot - IT Highway Egattur,
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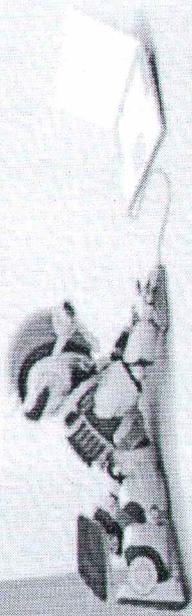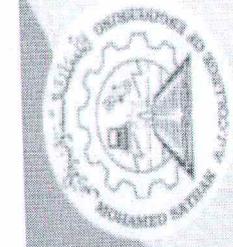Course coordinator

7 Manju

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Head - IQAC & HoD/ECE

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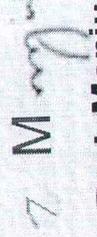
Program Educational Objectives (PEO)

PEO1: Graduates will be prepared for designing Electronics and Communication Components and Systems with Creativity and Sustainability.

PEO2: Graduates will be Skilled in the use of modern tools for Critical Problem Solving and analyzing Industrial and Societal requirements.

PEO3: Graduates will be prepared with managerial and Leadership Skills for Career and Starting up own firms.

Program Specific Outcome (PSO)

Engineering graduates will be able to

PSO1: Apply the acquired knowledge in analyze, develop and test Creative Solution for Electronics and Communication Systems and its application.

PSO2: Provide cost effective and eco-friendly Solutions for Real time Problems of Industrial and Societal needs using Embedded & IoT tools.

Course Outcome (CO)

Personal Timetable

Periods	1	2	3	4	5	6	7	8
Time	8:15-9:05	9:05-9:55	10:10-11:00	11:00-11:50	11:50-12:40	1:40-2:30	2:30-3:20	
Monday						IIOT		
Tuesday			IIDT			Embedded IoT Lab ← IIOT LAB →		
Wednesday	EnIoT		← IIC-IoT →		EnIoT			
Thursday	IIOT			EnIoT				
Friday				EnIoT				

Class Timetable

Periods	1	2	3	4	5	6	7	8
Time	8:15-9:05	9:05-9:55	10:10-11:00	11:00-11:50	11:50-12:40	1:40-2:30	2:30-3:20	
Monday	WC	IP	TLRF	VLSI	TLRF	IIOT	WC	
Tuesday	VLSI	LPIC	IIOT	MC	TLRF ← LPIC LAB →			
Wednesday	IP	LPIC ←	TCC	→ IIOT LAB →				
Thursday	IIOT	TLRF	IP	WC	MC	← VLSI LAB →		
Friday	VLSI	WC	IP	VLSI	TLRF ← WC LAB →			

Learners			Medium		Gender		Stay	
Slow	Average	Advance	Tamil (TM)	English (EM)	Boys	Girls	Hostler	Day scholar
					24	02		

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3

2

S. No.	Register Number	Students Name	Profile			Class	1	2	3	4	5	6	7	8	9	10
			Arrears	CGPA	Hostel / DS / OB	Month	08	08	08	08	08	09	09	10	10	10
						Date	02	09	16	23	30	20	27	4	11	25
						Period	3,4,5	3,4,5	3,4,5	3,4,5	3,4,5	3,4,5	3,4,5	3,4,5	3,4,5	3,4,5
		CSE														
1	31181104005	Sulaiman H					/	AB	/	OD	/	/	/	/	/	AB
2	31182104061	Yaser Arafath A					AB	AB	AB	OD	/	/	/	a	/	AB
3		**ECE**	-													
4	31182110602	Abinaya.V					/	/	/	/	/	/	/	/	/	AB
5	31182110601b	Maheswaran R					/	/	/	/	/	/	/	/	/	/
6	31182110601	Abdul Baasit A					/	/	/	/	/	/	/	a	/	/
7	31182110019	Md. Yaheyan J					AB	/	/	/	/	/	/	a	/	AB
8	31182110015	Kishore D					/	/	/	/	/	/	/	a	/	AB
9	30821106304	Sahul Hameed T					/	AB	/	/	/	/	/	/	/	/
10	31181106008	Dhinesh C					/	/	/	/	/	/	/	a	/	AB
11	31182106014	Jayasudhan.T					/	/	/	/	/	/	/	a	/	AB
12	31182106303	Karthikeyan.S					/	/	/	/	/	/	/	a	/	/
13	31182110003	Anish Kumar.K					/	/	/	/	/	/	/	a	/	/
14	31182110010	Gopi. K					/	/	/	/	/	/	/	/	/	/
15	31182110009	Gajendiran.R					/	/	/	AB	/	/	/	/	a	/
16	31182110017	Majithul Hikkum					-	/	/	/	/	/	/	a	/	AB
17		**MECH**														
18	31182114002	Dhanushadithya					/	/	/	/	/	a	a	a	/	/
19	31182114018	Udaya Kumar					AB	/	/	/	/	/	/	1	a	/
20		**IT**														
21	31182120509	Muhasin Ahamed							AB	/	/	/	/	a	/	/
22	31182120501	Mubacker Sideeq					AB	/	/	/	/	/	/	a	/	/
23	31182120546	Rakshita					AB	/	/	/	/	/	/	a	/	/
	No. of absentees						5	7	2	3	4	1	1	12	2	8
	Signature of the faculty member															

4

Department of Electronics and Communication Engineering
Technology Centre for E-yantra: Embedded & Robotics

Syllabus: Internet of Things (IoT)

Objective:

The objective of this course is to impact necessary and practical knowledge of components of Internet of Things and develop skills required to build real-life IoT based projects

Module 1: IoT Introduction Sensors & Actuators   9

IoT Architecture, Physical & Logical IoT design Basics, IoT Enabling Technologies, IoT Stack, IoT Applications, Sensor working, Sensor Characteristics, Types of sensors and working principle Sensors used in IoT

Module 2: IoT Hardware platforms   9

IoT Hardware platforms Specifications and interfaces Serial Communication Protocols Arduino IDE Arduino Programming Interfacing various sensors, modules and devices to Arduino, Python program with Raspberry PI with focus on interfacing external gadgets, controlling output, reading input from pins.

Module 3: Networking Fundamentals & Wireless for IoT   9

TCP/IP Basics, IPV6, Network devices &configurations, Web servers & Socket programming, Overview of Wireless Sensor Networks., IEEE standards for IoT, Overview of Wireless Modems (RF, GSM/GPRS, Bluetooth, RFID, Wi-Fi etc.), NodeMCU and ESP32.

Module 4: IoT Protocols   9

IoT Protocol overview, MQTT, COAP, HTTP/HTTPS, 6lowpan, UART Communication Protocol, I2C Protocol device interfacing and decoding of signal, SPI Protocol device interfacing and decoding of signal, WIFI and Router interfacing, Ethernet Configuration, Bluetooth study and analysis of data flow, Zigbee Interfacing and study of signal flow.

Module 5: Cloud platforms for IoT & Applications development   9

IoT dashboards - Introduction to various cloud platforms, Device and data management from Cloud Platforms, Uploading data from hardware platforms to cloud, Development of IoT Applications – Home Automation – Smart Agriculture – Smart Cities – Smart Healthcare.

Total: 45 Hours

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LIST OF PRACTICAL EXERCISES:

1. i) Write a program to control Servo Motor (0 to 180 degree and 180 to 0 degree) using Arduino with Tinkercad simulator.
    ii) Write a program to control LED using Serial Input (using text) and Arduino with Tinkercad simulator

2. To interface LED/Buzzer with Arduino/Raspberry Pi and write a program to turn ON LED for 1 sec after every 2 seconds.

3. To interface Push button / Digital Sensor (IR/LDR) with Arduino/Raspberry Pi and write a program to turn ON LED when push button is pressed or at sensor detection.

4. To interface DHT11 Sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings.

5. To interface motor using relay with Arduino/Raspberry Pi and write a program to turn ON Motor when push button is pressed.

6. To interface OLED with Arduino/Raspberry Pi and write a program to display temperature and humidity readings on it.

7. To interface Bluetooth with Arduino/Raspberry Pi and write a program to send sensor data to smartphone using Bluetooth.

8. To interface Bluetooth with Arduino/Raspberry Pi and write a program to turn LED ON/OFF when "1/0" is received from smartphone using Bluetooth.

9. Write a program on Arduino/Raspberry Pi to upload temperature and humidity data to Adafruit IO Cloud.

10. Write a program to create web server with DHT11 on Arduino/Raspberry Pi to display temperature and humidity readings.

11. Write a program to create web socket on Arduino/Raspberry Pi to control LED turn ON/OFF.

12. Write a program to control Stepper motor using Google Assistance with IFTTT.

13. Write a program to control LED turn ON/OFF from Anywhere (Firebase Web App)

14. Write a program to Stepper control motor from Android App (MIT App Inventor)

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Department of Electronics and Communication Engineering

Technology Centre for E-yantra: Embedded & Robotics

Syllabus: Internet of Things (IoT)

Syllabus Competition Status

Module No	Title	Status
1.	IoT Introduction Sensors & Actuators	100%
2.	IoT Hardware platforms	100%
3.	Networking Fundamentals & Wireless for IoT	50%
4.	IoT Protocols	-
5.	Cloud platforms for IoT & Applications development	-

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Department of Electronics and Communication Engineering

Technology Centre for E-yantra: Embedded & Robotics

Syllabus: Internet of Things (IoT)

List of Activity Conducted

1. Write a program to control Servo Motor (0 to 180 degree and 180 to 0 degree) using Arduino.

2. To interface LED/Buzzer with Arduino and write a program to turn ON LED for 1 sec after every 2 seconds.

3. To interface DHT11 Sensor with Arduino and write a program to print temperature and humidity readings.

4. To interface LAMP using relay with Arduino and write a program to turn ON and OFF.

5. To interface Bluetooth with Arduino and write a program to turn LED ON/OFF when "1/0" is received from smartphone using Bluetooth.

6. Write a program to create web server on NodeMCU- ESP8266 to control Lamp turn ON/OFF.

Activity Photographs:

Department of Electronics and Communication Engineering
Technology Centre for E-yantra: Embedded & Robotics

Syllabus: Internet of Things (IoT)

Questions

1. To write a program and execute to control Servo Motor (0 to 180 degree and 180 to 0 degree) using Arduino.

2. To write and execute an interface LED/Buzzer with Arduino and write a program to turn ON LED for 1 sec after every 2 seconds.

3. To interface LAMP using relay with Arduino and write a program to turn ON and OFF

4. To interface DHT11 Sensor with Arduino and write a program to print temperature and humidity readings.

5. To write and execute a C++ program using a suitable Gas sensor and microcontroller for detecting LPG gas leak.

6. To develop and execute a C++ program using a suitable sensor and microcontroller to control morning alarm and night lamp.

7. To develop and execute a C++ program using a suitable microcontroller and ultrasonic sensor to accurately measure the distance between the sensor and an object.

8. To interface Bluetooth module with Arduino and write a program to turn LED ON/OFF when "1/0" is received from smartphone using Bluetooth.

9. Write a program to create web server on NodeMCU- ESP8266 to control Lamp turn ON/OFF.

10. To write and execute a C++ program using a NodeMCU-ESP8266 microcontroller to control LED ON and OFF using Adafruit IO Cloud.

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Internal Examiner   **External Examiner**

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A.J. COLLEGE OF ENGINEERING

34. Rajiv Gandhi Salai (OMR). Siruseri IT Park. Chennai - 603 103.

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Mr.M.Ashok kumar
Course coordinator

Dr. I. Manju
Head - IQAC & HoD/ECE

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No.34, Rajiv Gandhi Salai (OMR)
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Chennai - 603103.

Dr. K.S. Srinivasan
Principal

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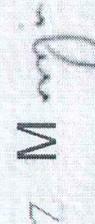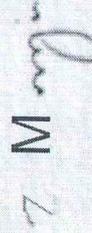34. Rajiv Gandhi Salai (OMR), Siruseri IT Park, Chennai - 603 103.

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Mr.M.Ashok kumar
Course coordinator

Dr. I. Manju
Head - IQAC & HoD/ECE

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Mr.M.Ashok kumar
Course coordinator

Dr. I. Manju
Head - IQAC & HoD/ECE

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Mr.M.Ashok kumar
Course coordinator

Dr. I. Manju
Head - IQAC & HoD/ECE

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Academic Year: 2023-2024 ODD

TCC - Electric Vehicle Design

MOHAMED SATHAK A J COLLEGE OF ENGINEERING, Chennai - 603103

VALUE ADDED COURSE - COURSE CONTENT

Department of Electrical and Electronics Engineering

Class : III Year / V Semester   Academic Year:2023 - 24

Name of the Value Added Course	Electric Vehicles	Name of the handling Faculty	Mrs. A. Gayathri

Course Objective
To present a comprehensive overview of Eectric and Hybrid Electric Vehices
To study about the working of Electric Vehicle
To impact the knowledge on energy storage devices
To learn electric vehicle drive systems
To understand the configuration of hybrid vehiclec

Course Outcome
After completing this course, students should demonstrate competency in the following skills:
Analysis the confuguration and control methods of Electric propulsion unit
Summarize the factors that control battery operational characteristics and the primary mechanisms
Describe the basic fundamentals and working principles of electric machines
Analysis the transmission characteristics and mathematical model of electric vehicles
Describe the energy management strategies used in hybrid and electric vehicles

Lesson Plan for VAC

Sl. No.	Topic	T / R* Book	Periods Required	Mode of Teaching
	Hardware			
1	Hardware components used in Electric Vehicle	T1	1	BB
2	Controller Connections	T1	1	BB
3	Battery Connections	T1	1	BB
4	Motor Connections	T2	1	BB
5	Accessories Connection	T2	1	BB
6	Assembling all components to Vehicle	T2	1	BB

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Simulation Fundamentals for the converters in MATLAB

7	Introduction to the Matlab	T1	1	BB
8	Converters in Electric Vehicles	T1	2	BB
9	DC-DC Converter Types and uses in EV's	T1	1	BB
10	Simulation of DC-DC converter	T1	2	BB
11	AC-DC Converter Types and uses in EV's	T1	1	BB
12	Simulation of AC-DC converter	T1	2	BB
13	DC-AC Converter Types and uses in EV's	T1	1	BB
14	Simulation of DC-AC converter	T1	2	BB
15	AC-AC Converter Types and uses in EV's	T1	1	BB
16	Simulation of AC-AC converter	T1	2	BB

Quiz / Mini Projects / Model Develpoed if any

1. Quiz on Battery management system

Text / Reference Books

1	Iqbal Hussai, "Electric & Hybrid vehicles Design Fundamentals", second edition, CRC Press, 2011.
2	M.Ehsani, Y.Gao, S.Gay and A.Emadi, Modern Electric Hybrid electric and Fuel Cell Vehicles. CRC Press, 2015
3	T.Denton, "Electric and Hybrid Vehicles", Routlede, 2016

Website / URL References
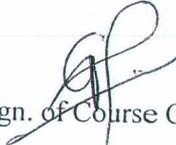
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2	https://youtu.be/WfiTscWVfWI
3	https://youtu.be/tyeSahlzt3Y

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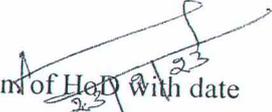
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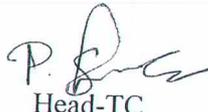
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TCC Assesment Attendance Sheet

Date: 22/11/2023

TCC Course: Electrical Vehicle Design

Total Students: 12

No. of Absentees: 0

S. No	Name of the Student	Marks for Assessment
1	HariHaran c	35
2	Mohamed Basil S	43
3	Thameem Ansaari	45
4	Abdul Malik J	50
5	M.Al Muhasif Rifath	45
6	SriKarthik V	50
7	Asma Fathima.P.T	45
8	A.Mohamed Izzat	45
9	Mohan raj.k	40
10	Nagaraj.B	38
11	Prasad N	50
12	M.Ahamed Sheik Dilliganish	Absent 45

Signature of Internal Assessor

Electric Vehicle Design Experiments

SYLLABUS

Unit 1 Electrical Vehicle Design Hardware

Hardware components used in Electric Vehicle, Controller Connections, Battery Connections, Motor Connections, Accessories Connection and Assembling all Components to Vehicles

Unit 2 Simulation Fundamentals for the converters in MATLAB

Introduction to the Matlab, Converters in Electric Vehicles, DC-DC Converter Types and uses in EV's, Simulation of DC-DC converter, AC-DC Converter Types and uses in EV's, Simulation of AC-DC converter, DC-AC Converter Types and uses in EV's, Simulation of DC-AC converter, AC-AC Converter Types and uses in EV's, Simulation of AC-AC converter

LIST OF SUGGESTED BOOKS

1. Iqbal Hussai, "Electric & Hybrid vehicles Design Fundamentals", second edition, CRC Press, 2011.

2. M.Ehsani, Y.Gao, S.Gay and A.Emadi, Modern Electric Hybrid electric and Fuel Cell Vehicles. CRC Press, 2015

3. T.Denton, "Electric and Hybrid Vehicles", Routlede, 2016

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LIST OF EXPERIMENTS

LIST Of EXPERIMENTS

1. Simulation on DC-DC Buck Boost Converter

2. Simulation on DC-DC Boost Converter

3. Simulation on AC-DC Converter

4. Simulation on DC-DC Converter

5. Simulation on AC- AC Converter

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This certificate is presented to:

Mr. Dilliganesh A

of EEE Department for Completion of Technological Centre Course "Electric Vehicle Design" from 21st August 2023 to 8th November 2023

Gayathri A
Faculty Trainer

Dr S Devikala
HoD/EEE

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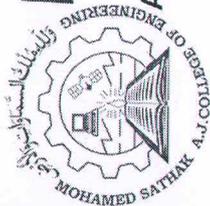
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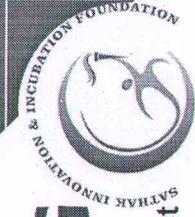Faculty Trainer

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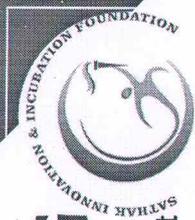
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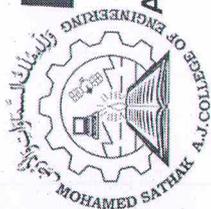## CERTIFICATE OF COMPLETION

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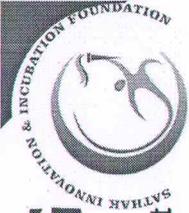Faculty Trainer

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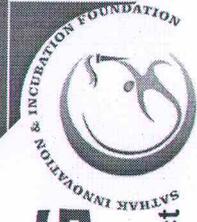**Gayathri A**
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HoD/EEE

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