SYLLABUS/ CURRICULUM

PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE

(Approved by AICTE & Affiliated to Anna University, Chennai)

Madurai - Sivagangai Highway, Arasanoor, Thirumansolai Post, Sivagangai Dt. - 630 561, Tamilnadu
Mobile : 9842102628, 7373002628   Email: info@psyec.edu.in   Website : www.psyec.edu.in

City Office : 10, Pandian Saraswathi St, Sivagami Nagar, Narayanapuram, Madurai - 625 014. Telefax- 0452 2682338, Mobile : 98423-02628

Department of Electrical And Electronics Engineering

Academic Year 2020-2021

OBJECTIVE OF THE COURSE

- Understand the basic concepts and components of hybrid electric vehicles.
- Learn to model and simulate HEV systems using MATLAB and Simulink.
- Analyze the performance and efficiency of HEVs.
- Explore different control strategies and energy management systems in HEVs.
- Develop skills to design and optimize HEV systems.

CHAPTER 1:

Introduction to Hybrid Electric Vehicles-Overview of hybrid electric vehicles (HEVs)-Types of HEVs: Series, Parallel, and Series-Parallel-Advantages and challenges of HEVs-Key components: Internal combustion engine (ICE), electric motor, battery, and power electronics- MATLAB and Simulink Basics-Introduction to MATLAB environment-Basics of Simulink for system modelling-Simulink libraries and toolboxes relevant to HEVs

CHAPTER 2:

Power train Architecture and Components: Internal combustion engine (ICE) modelling-Electric motor and generator modelling-Battery modeling: Types, characteristics, and simulation-Power electronics: Inverters and converters-HEV Modeling in Simulink-Building a simple HEV model in Simulink-Integrating ICE, electric motor, and battery models-Simulating HEV power flow and performance

CHAPTER 3:

Energy Management and Control Strategies: Overview of energy management systems (EMS)-Rule-based and optimization-based control strategies-Implementing EMS in Simulink-Case studies on control strategies in different HEV architectures-Performance Analysis and Optimization-Analyzing HEV performance: Fuel efficiency, emissions, and drivability-Optimization techniques for HEV design-Using Simulink for optimization and design improvement

CHAPTER 4:

Advanced Topics in HEVs: Plug-in hybrid electric vehicles (PHEVs)-Regenerative braking systems-Future trends and technologies in HEVs
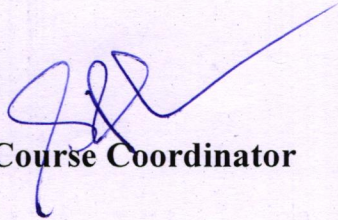
CHAPTER 5:

Hands-on Projects and Case Studies: Real-world case studies of HEV systems-Group projects: Designing and simulating an HEV model-Presentation and discussion of project outcomes
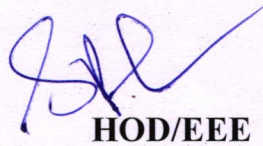
OUTCOMES:

- Explain the basic principles and components of HEVs.
- Use MATLAB and Simulink to model and simulate HEV systems.
- Analyze the performance and efficiency of different HEV configurations.
- Design and implement energy management strategies for HEVs.
- Apply optimization techniques to improve HEV design and performance.

Total: 35 hours

Course Coordinator   **HOD/EEE**   **PRINCIPAL**

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Department of Electrical And Electronics Engineering

Academic Year 2020-2021

VACEE2021HEV- Introduction to Hybrid Electric Vehicle using MATLAB and Simulation

Course Schedule

Date	Time	TOPICS
02/07/2021	9.00 am to 12.30 pm 1.00 pm to 5.00 pm	**Introduction to Hybrid Electric Vehicles**-Overview of hybrid electric vehicles (HEVs)-Types of HEVs: Series, Parallel, and Series-Parallel-Advantages and challenges of HEVs-Key components: Internal combustion engine (ICE), electric motor, battery, and power electronics-MATLAB and Simulink Basics-Introduction to MATLAB environment-Basics of Simulink for system modelling-Simulink libraries and toolboxes relevant to HEVs
03/07/2021	9.00 am to 12.30 pm 1.00 pm to 5.00 pm	**Power train Architecture and Components:** Internal combustion engine (ICE) modelling-Electric motor and generator modelling-Battery modeling: Types, characteristics, and simulation-Power electronics: Inverters and converters-HEV Modeling in Simulink-Building a simple HEV model in Simulink-Integrating ICE, electric motor, and battery models-Simulating HEV power flow and performance
04/07/2021	9.00 am to 12.30 pm 1.00 pm to 5.00 pm	**Energy Management and Control Strategies:** Overview of energy management systems (EMS)-Rule-based and optimization-based control strategies-Implementing EMS in Simulink-Case studies on control strategies in different HEV architectures-Performance Analysis and Optimization-Analyzing HEV performance: Fuel efficiency, emissions, and drivability-Optimization techniques for HEV design-Using Simulink for optimization and design improvement
05/07/2021	9.00 am to 12.30 pm 1.00 pm to 5.00 pm	**Advanced Topics in HEVs:** Plug-in hybrid electric vehicles (PHEVs)-Regenerative braking systems-Future trends and technologies in HEVs
06/07/2021	9.00 am to 12.30 pm 1.00 pm to 5.00 pm	**Hands-on Projects and Case Studies:** Real-world case studies of HEV systems-Group projects: Designing and simulating an HEV model-Presentation and discussion of project outcomes

Total Hours 35

Tea Break : 10:40 am to 10:55am & 02:45 pm to 15:00 pm
Lunch Break : 12:30pm to 01:00pm

Course Coordinator   HOD/EEE   PRINCIPAL

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Academic Year 2020-2021

One page Report

Name of the course	: Introduction to Hybrid Electric Vehicle using MATLAB and Simulation
Development Course Code	: VACEE2021HEV
Course Coordinator	: Mrs.S.Pandimeena
Date/Duration	: 02.07.2021-06.07.2021— 35 hours

I here affirm that the Final Year students of strength 19 have been taught the value-added course title **"Introduction to Hybrid Electric Vehicle using MATLAB and Simulation"** as per the syllabus and completed within the stipulated time duration.

I confirm that the value-added course titled **"Introduction to Hybrid Electric Vehicle using MATLAB and Simulation"** has been conducted in the beginning of the semester and course delivery along with the attendance of the students was recorded.

I confirmed that all the students were actively participated in the course and the eligible students were certified for the course.

Mrs. S.Pandimeena,	Mrs.S.Pandimeena,	Dr.R.RAJA,
AP/EEE	AP/EEE	Principal
Course Co-Ordinator	Head of the Department	

Dr. R. RAJA M.E., Ph.D.,
PRINCIPAL
PANDIAN SARASWATHI YADAV
ENGINEERING COLLEGE
ᵃⁿᵒᵉ· Thirumansolai P.O-630 56
.vgangai Dist, Tamil Nadu

ASSESSMENT PROCEDURE

PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE

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Department of Electrical And Electronics Engineering

Academic Year 2020-2021

VACEE2021HEV- Introduction to Hybrid Electric Vehicle using MATLAB and

Simulation

Assessment Questions with Answer

1. What is a hybrid electric vehicle (HEV)?

A) A vehicle that runs solely on electric power

B) A vehicle that uses a combination of an internal combustion engine and an electric motor

C) A vehicle that uses hydrogen fuel cells

D) A vehicle that uses solar power

Answer: B) A vehicle that uses a combination of an internal combustion engine and an electric motor

2. Which of the following is a primary benefit of HEVs?

A) Unlimited driving range

B) Zero emissions in all conditions

C) Improved fuel efficiency compared to conventional vehicles

D) Lower initial cost compared to gasoline vehicles

Answer: C) Improved fuel efficiency compared to conventional vehicles

3. What is regenerative braking in HEVs?

A) A system that uses traditional brake pads

B) A system that converts kinetic energy into electrical energy during braking

C) A system that increases the speed of the vehicle

D) A system that only works at high speeds

Answer: B) A system that converts kinetic energy into electrical energy during braking

4. In MATLAB, which toolbox is commonly used for modeling and simulating hybrid electric vehicles?

A) Simulink

B) Image Processing Toolbox

C) Statistics and Machine Learning Toolbox

D) Signal Processing Toolbox

Answer: A) Simulink

5. Which MATLAB function is used to create a new Simulink model?

A) **new_simulink**

B) **open_system**

C) **create_model**

D) **sim**

Answer: B) open_system

6. In a Simulink model for an HEV, what type of block represents the internal combustion engine?

A) Transfer Function Block

B) Subsystem Block

C) S-Function Bloc

D) Lookup Table Block

Answer: B) Subsystem Block

7. What is the purpose of using a battery model in HEV simulations?

A) To measure the speed of the vehicle

B) To calculate the fuel consumption

C) To simulate the energy storage and power supply characteristics

D) To model the transmission system

Answer: C) To simulate the energy storage and power supply characteristics

8. In a MATLAB simulation, how can you visualize the state of charge (SOC) of a battery over time?

A) Using the **plot** function

B) Using the **disp** function

C) Using the **fprintf** function

D) Using the **input** function

Answer: A) Using the **plot** function

9. What does the sim command do in a Simulink model?

A) Opens the Simulink library

B) Compiles the MATLAB script

C) Runs the simulation of the model

D) Displays the results in the command window

Answer: C) Runs the simulation of the model

10. In HEV simulations, which parameter is crucial for determining the efficiency of the electric motor?

A) Motor torque

B) Motor speed

C) Motor power

D) All of the above

Answer: D) All of the above

PANDIAN SARASWATHI YADAV
ENGINEERING COLLEGE

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Department of Electrical And Electronics Engineering

Academic Year 2020-2021

VACEE2021HEV- Introduction to Hybrid Electric Vehicle using MATLAB and Simulation

Assessment Test Paper

REGISTER NUMBER: 912017105002

NAME OF THE STUDENT: M. APARNA

1. What is a hybrid electric vehicle (HEV)?
   A) A vehicle that runs solely on electric power
   B) A vehicle that uses a combination of an internal combustion engine and an electric motor
   C) A vehicle that uses hydrogen fuel cells
   D) A vehicle that uses solar power

2. Which of the following is a primary benefit of HEVs?
   A) Unlimited driving range
   B) Zero emissions in all conditions
   C) Improved fuel efficiency compared to conventional vehicles
   D) Lower initial cost compared to gasoline vehicles

3. What is regenerative braking in HEVs?
   A) A system that uses traditional brake pads
   B) A system that converts kinetic energy into electrical energy during braking
   C) A system that increases the speed of the vehicle
   D) A system that only works at high speeds

4. In MATLAB, which toolbox is commonly used for modeling and simulating hybrid electric vehicles?
   A) Simulink
   B) Image Processing Toolbox
   C) Statistics and Machine Learning Toolbox
   D) Signal Processing Toolbox

5. Which MATLAB function is used to create a new Simulink model?
   A) new_simulink
   B) open_system
   C) create_model
   D) sim

6. In a Simulink model for an HEV, what type of block represents the internal combustion engine?
   A) Transfer Function Block
   B) Subsystem Block
   C) S-Function Bloc
   D) Lookup Table Block

7. What is the purpose of using a battery model in HEV simulations?
   A) To measure the speed of the vehicle
   B) To calculate the fuel consumption
   C) To simulate the energy storage and power supply characteristics
   D) To model the transmission system

...TLAB simulation, how can you visualize the state of charge (SOC) of a over time?

A) Using the **plot** function
B) Using the **disp** function
C) Using the **fprintf** function
D) Using the **input** function

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A) Opens the Simulink library
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A) Motor torque
B) Motor speed
C) Motor power
D) All of the above

Pandian Saraswathi yadav Engineering College, Arasanoor -630561

Department of Electrical and Electronics Engineering

Student Performance Sheet

Academic Year   : 2020-2021

Cource Code   : VACEE2021HEV

Course Name   : Introduction to Hybrid Electric Vehicle using MATLAB and Simulation

Duration of hours : 35

Period of Course : 02.07.2021-06.07.2021

Sl. No	Register Number	Student Name	Marks
	Assessment Marks		
1	912017105002	M.ABARNA	85
2	912017105005	S.HARIBALAN	84
3	912017105006	T.JEYARAJ	83
4	912017105008	R.JOHN ROBERT	82
5	912017105009	R.JOYS PREETHI	81
6	912017105010	M.KARTHICK	81
7	912017105011	MOTHI BALA VISHAGAN	81
8	912017105013	M.NAVEEN PRASATH	76
9	912017105015	R.ROBIN	80
10	912017105016	B.P.SAKTHI	95
11	912017105017	P.SAKTHI VISHNU PRIYAN	94
12	912017105018	W.SANTHOSH	93
13	912017105019	R.SUBA	80
14	912017105020	S.THIRUBAKARAN	82
15	912017105021	P.USHA NANDHINI	83
16	912017105022	R.VENKAT MURUGAN	84
17	912017105023	M.VINOTH KUMAR	85
18	912017105024	B.YASHWANTH KUMAR	86
19	912017105303	S.SENTHILNATHAN	88

Course coordinator   HOD/EEE   PRINCIPAL

Department of Electrical And Electronics Engineering

Academic Year 2020-2021

VACEE2021HEV- Introduction to Hybrid Electric Vehicle using MATLAB and Simulation

ASSESSMENT MODE

In order to get a certificate for this course, the students should satisfy the following constraints

Attendance	: 75 %	
Assessment Question	: MCQ pattern	
Assessment Mark	: Greater than or equal to 50%	

Course Coordinator   **HOD/EEE**   **PRINCIPAL**

STUDENTS ATTENDANCE

Pandian Saraswathi yadav Engineering College,Arasanoor -630561

Department of Electrical and Electronics Engineering

Student Attendance Sheet

Academic Year : 2020-2021

Cource Code : **VACEE2021HEV**

Course Name :Introduction to Hybrid Electric Vehicle using MATLAB and Simulation

Duration of hours : 35

Period of Course : 02.07.2021-06.07.2021

Sl. No	Register Number	Student Name	09.00 am - 10.00 am	10.00 am - 11.00 am	11.15 am - 12.15pm	01.00 pm - 02.00 pm	02.00 pm - 03.00 pm	03.15 pm - 04.15 pm
	Attendance Sheet				Date: 2.7.21.			
1	912017105002	M.ABARNA	P	P	P	P	P	P.
2	912017105005	S.HARIBALAN	P	P	P	P	P	P.
3	912017105006	T.JEYARAJ	P	P	P	P	P	P.
4	912017105008	R.JOHN ROBERT	P	P	P	P	P	P.
5	912017105009	R.JOYS PREETHI	P	P	P	P	P	P.
6	912017105010	M.KARTHICK	P	P	P	P	P	P
7	912017105011	MOTHI BALA VISHAGAN	P	P	P	P	P	P.
8	912017105013	M.NAVEEN PRASATH	P	P	P	P	P	P
9	912017105015	R.ROBIN	P	P	P	P	P	P.
10	912017105016	B.P.SAKTHI	P	P	P	P	P	P
11	912017105017	P.SAKTHI VISHNU PRIYAN	P	P	P	P	P	P
12	912017105018	W.SANTHOSH	P	P	P	P	P	P
13	912017105019	R.SUBA	P	P	P	P	P	P
14	912017105020	S.THIRUBAKARAN	P	P	P	P	P	P
15	912017105021	P.USHA NANDHINI	P	P	P	P	P	P
16	912017105022	R.VENKAT MURUGAN	P	P	P	P	P	P
17	912017105023	M.VINOTH KUMAR	P	P	P	P	P	P
18	912017105024	B.YASHWANTH KUMAR	P	P	P	P	P	P
19	912017105303	S.SENTHILNATHAN	P	P.	P	P	P	P

P- Present.

Tea Break FN- 11:00 am to 11:15am & AN-03:00 pm to 03:15 pm

Lunch Break 12:15 pm to 01:00pm

Course coordinator   HOD EEE   PRINCIPAL

Student Attendance Sheet

Academic Year : 2020-2021

Cource Code : **VACEE2021HEV**

Course Name :Introduction to Hybrid Electric Vehicle using MATLAB and Simulation

Duration of hours : 35

Period of Course : 02.07.2021-06.07.2021

Attendance Sheet			Date: 3.7.21					
Sl. No	Register Number	Student Name	09.00 am - 10.00 am	10.00 am - 11.00 am	11.15 am - 12.15pm	01.00 pm - 02.00 pm	02.00 pm - 03.00 pm	03.15 pm - 04.15 pm
1	912017105002	M.ABARNA	P	P	P	P	P	P
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3	912017105006	T.JEYARAJ	P	P	P	P	P	P
4	912017105008	R.JOHN ROBERT	P	P	P	P	P	P
5	912017105009	R.JOYS PREETHI	P	P	P	P	P	P
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9	912017105015	R.ROBIN	P	P	P	P	P	P
10	912017105016	B.P.SAKTHI	P	P	P	P	P	P
11	912017105017	P.SAKTHI VISHNU PRIYAN	P	P	P	P	P	P
12	912017105018	W.SANTHOSH	P	P	P	P	P	P
13	912017105019	R.SUBA	P	P	P	P	P	P
14	912017105020	S.THIRUBAKARAN	P	P	P	P	P	P
15	912017105021	P.USHA NANDHINI	P	P	P	P	P	P
16	912017105022	R.VENKAT MURUGAN	P	P	P	P	P	P
17	912017105023	M.VINOTH KUMAR	P	P	P	P	P	P
18	912017105024	B.YASHWANTH KUMAR	P	P	P	P	P	P
19	912017105303	S.SENTHILNATHAN	P.	P.	P.	P	P	P

P—present.

Tea Break   FN- 11:00 am to 11:15am & AN-03:00 pm to 03:15 pm
Lunch Break   12:15 pm to 01:00pm

Course coordinator   HOD/EEE   PRINCIPAL

Pandian Saraswathi yadav Engineering College,Arasanoor -630561

Department of Electrical and Electronics Engineering

Student Attendance Sheet

Academic Year   : 2020-2021

Cource Code   : VACEE2021HEV

Course Name   :Introduction to Hybrid Electric Vehicle using MATLAB and Simulation
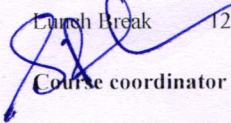
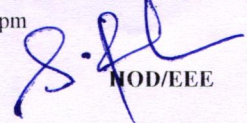Duration of hours : 35

Period of Course   : 02.07.2021-06.07.2021

Attendance Sheet			Date: 02-7.2021-6.7.21					
Sl. No	Register Number	Student Name	09.00 am - 10.00 am	10.00 am - 11.00 am	11.15 am - 12.15pm	01.00 pm - 02.00 pm	02.00 pm - 03.00 pm	03.15 pm - 04.15 pm
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4	912017105008	R.JOHN ROBERT	P	P	P	P	P	P
5	912017105009	R.JOYS PREETHI	P	P	P	P	P	P
6	912017105010	M.KARTHICK	P	P	P	P	P	P
7	912017105011	MOTHI BALA VISHAGAN	P	P	P	P	P	P
8	912017105013	M.NAVEEN PRASATH	P	P	P	P	P	P
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13	912017105019	R.SUBA	P	P	P	P	P	P
14	912017105020	S.THIRUBAKARAN	P	P	P	P	P	P
15	912017105021	P.USHA NANDHINI	P	P	P	P	P	P
16	912017105022	R.VENKAT MURUGAN	P	P	P	P	P	P
17	912017105023	M.VINOTH KUMAR	P	P	P	P	P	P
18	912017105024	B.YASHWANTH KUMAR	P	P	P	P	P	P
19	912017105303	S.SENTHILNATHAN	P	P	P	P	P	P

P-present

Tea Break   FN- 11:00 am to 11:15am & AN-03:00 pm to 03:15 pm
Lunch Break   12:15 pm to 01:00pm

Course coordinator   HOD/EEE   PRINCIPAL

Pandian Saraswathi yadav Engineering College, Arasanoor -630561

Department of Electrical and Electronics Engineering

Student Attendance Sheet

Academic Year   : 2020-2021

Cource Code   : **VACEE2021HEV**

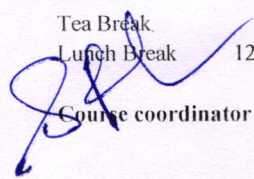Course Name   :Introduction to Hybrid Electric Vehicle using MATLAB and Simulation
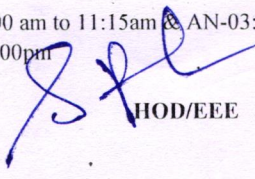
Duration of hours : **35**

Period of Course   : 02.07.2021-06.07.2021

Attendance Sheet			Date: 2.7.21 - 6.7.2021.					
Sl. No	Register Number	Student Name	09.00 am - 10.00 am	10.00 am - 11.00 am	11.15 am - 12.15pm	01.00 pm - 02.00 pm	02.00 pm - 03.00 pm	03.15 pm - 04.15 pm
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18	912017105024	B.YASHWANTH KUMAR	P	P	P	P	P	P
19	912017105303	S.SENTHILNATHAN	P	P	P	P	P	P.

P-Present

Tea Break   FN- 11:00 am to 11:15am & AN-03:00 pm to 03:15 pm
Lunch Break   12:15 pm to 01:00pm

Course coordinator   HOD/EEE   PRINCIPAL

Pandian Saraswathi yadav Engineering College,Arasanoor -630561

Department of Electrical and Electronics Engineering

Student Attendance Sheet

Academic Year	: 2020-2021
Cource Code	: **VACEE2021HEV**
Course Name	:Introduction to Hybrid Electric Vehicle using MATLAB and Simulation
Duration of hours	: **35**
Period of Course	: 02.07.2021-06.07.2021

Attendance Sheet			Date: 2.7.21 - 6.7.21.					
Sl. No	Register Number	Student Name	09.00 am - 10.00 am	10.00 am - 11.00 am	11.15 am - 12.15pm	01.00 pm - 02.00 pm	02.00 pm - 03.00 pm	03.15 pm - 04.15 pm
1	912017105002	M.ABARNA	P	P	P	P	P	P
2	912017105005	S.HARIBALAN	P	P	P	P	P	P
3	912017105006	T.JEYARAJ	P	P	P	P	P	P
4	912017105008	R.JOHN ROBERT	P	P	P	P	P	P
5	912017105009	R.JOYS PREETHI	P	P	P	P	P	P
6	912017105010	M.KARTHICK	P	P	P	P	P	P
7	912017105011	MOTHI BALA VISHAGAN	P	P	P	P	P	P
8	912017105013	M.NAVEEN PRASATH	P	P	P	P	P	P
9	912017105015	R.ROBIN	P	P	P	P	P	P
10	912017105016	B.P.SAKTHI	P	P	P	P	P	P
11	912017105017	P.SAKTHI VISHNU PRIYAN	P	P	P	P	P	P
12	912017105018	W.SANTHOSH	P	P	P	P	P	P
13	912017105019	R.SUBA	P	P	P	P	P	P
14	912017105020	S.THIRUBAKARAN	P	P	P	P	P	P
15	912017105021	P.USHA NANDHINI	P	P	P	P	P	P
16	912017105022	R.VENKAT MURUGAN	P	P	P	P	P	P
17	912017105023	M.VINOTH KUMAR	P	P	P	P	P	P
18	912017105024	B.YASHWANTH KUMAR	P	P	P	P	P	P
19	912017105303	S.SENTHILNATHAN	P	P	P	P	P	P

P-Present

Tea Break — FN- 11:00 am to 11:15am & AN-03:00 pm to 03:15 pm
Lunch Break — 12:15 pm to 01:00pm

Course coordinator   HOD/EEE   PRINCIPAL

Enrollment Student Name List

Pandian Saraswathi yadav Engineering College,Arasanoor -630561

Department of Electrical and Electronics Engineering

Student Registration Sheet

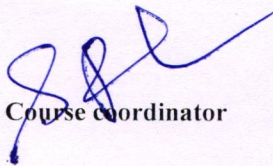Academic Year   : 2020-2021

Cource Code   : VACEE2021HEV

Course Name   : Introduction to Hybrid Electric Vehicle using MATLAB and Simulation
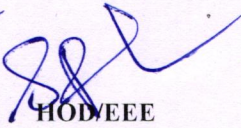
Duration of hours   : 35

Period of Course   : 02.07.2021-06.07.2021

Sl. No	Register Number	Student Name	Signature
	Enrolled Students List		
1	912017105002	M.ABARNA	P
2	912017105005	S.HARIBALAN	P
3	912017105006	T.JEYARAJ	P
4	912017105008	R.JOHN ROBERT	P
5	912017105009	R.JOYS PREETHI	P
6	912017105010	M.KARTHICK	P
7	912017105011	MOTHI BALA VISHAGAN	P
8	912017105013	M.NAVEEN PRASATH	P
9	912017105015	R.ROBIN	P
10	912017105016	B.P.SAKTHI	P
11	912017105017	P.SAKTHI VISHNU PRIYAN	P
12	912017105018	W.SANTHOSH	P
13	912017105019	R.SUBA	P
14	912017105020	S.THIRUBAKARAN	P
15	912017105021	P.USHA NANDHINI	P
16	912017105022	R.VENKAT MURUGAN	P
17	912017105023	M.VINOTH KUMAR	P
18	912017105024	B.YASHWANTH KUMAR	P
19	912017105303	S.SENTHILNATHAN	P.

P-present.

Course coordinator   HOD/EEE   PRINCIPAL

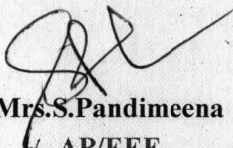# MODEL CERTIFICATES
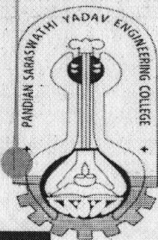
PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE

Approved by AICTE & Affiated to Anna University, Chennai.
Arasanoor, Thirumansolai Post, Sivagangai – Madurai Highway, Tamilnadu - 630 561

Value added course on

Introduction to Hybrid Electric Vehicle using MATLAB and Simulation

Organized by

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
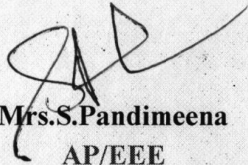
CERTIFICATE

This is Certify that .... R.SUBA .... From **Final-year EEE** has participated in the value-added course on **Introduction to Hybrid Electric Vehicle using MATLAB and Simulation** organized by th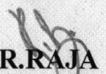e Department of Electrical And Electronics Engineering From 02.07.2021 to 06.07.2021 (35 Hours) at Pandian Saraswathi Yadav Engineering College, Sivagangai.

Mrs.S.Pandimeena
AP/EEE

Head of the Department

R
RAJA

Digitally signed
by R RAJA
Date:
2024.07.13
13:35:33 +05'30'

Dr.R.RAJA
Principal
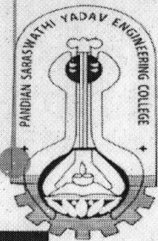
PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE

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Arasanoor, Thirumansolai Post, Sivagangai – Madurai Highway, Tamilnadu - 630 561

Value added course on

Introduction to Hybrid Electric Vehicle using MATLAB and Simulation

Organized by

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CERTIFICATE

This is Certify that .... B.P. SAKTHI .... From **Final year**
EEE has participated in the value-added course on **Introduction to Hybrid Electric Vehicle using MATLAB and Simulation** organized by the Department of Electrical And Electronics Engineering From 02.07.2021 to 06.07.2021 (35 Hours) at Pandian Saraswathi Yadav Engineering College, Sivagangai.
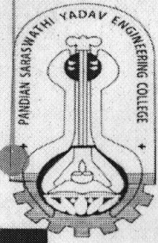
Mrs.S.Pandimeena
AP/EEE
Head of the Department

Dr.R.RAJA
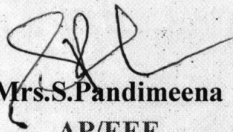Principal

PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE

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Arasanoor, Thirumansolai Post, Sivagangai – Madurai Highway, Tamilnadu - 630 561

Value added course on

Introduction to Hybrid Electric Vehicle using MATLAB and Simulation

Organized by

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CERTIFICATE

This is Certify that .... M. ABARNA .... From **Final year EEE** has participated in the value-added course on **Introduction to Hybrid Electric Vehicle using MATLAB and Simulation** organized by the Department of Electrical And Electronics Engineering From 02.07.2021 to 06.07.2021 (35 Hours) at Pandian Saraswathi Yadav Engineering College, Sivagangai.
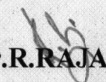
Mrs.S.Pandimeena
AP/EEE
Head of the Department

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R RAJA
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R RAJA

Dr.R.RAJA
Principal