

**Report**

**On**

**ADVANCED COURSE ON**

**“MODELING AND SIMULATION OF ELECTRICAL VEHICLE USING MATLAB”**

As a part of

**Emerging Technology course**

**Under**

**Engineering for sustainable development program**

**19/06/2021 to 10/07/2021**

**Organized by**

**Electrical Vehicle Club, Department of Electrical and Electronics Engineering**

**In association with**

**H&S Department**

**at**

**KG Reddy College of Engineering & Technology**

**Submitted by**


**Srinivas D, Assistant professor, Dept. of Electrical and Electronics Engineering**



**Head of the Department**

**HEAD**

Dept. of Electrical & Electronics Engineering  
KG Reddy College of Engineering & Technology  
Chilkur (V), Moinabad (M), R.R. Dist-501 504.



**PRINCIPAL**  
**PRINCIPAL**  
KG Reddy College of Engineering & Technology  
Chilkur (V), Moinabad (M),  
R.R. Dist. Telangana.

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### **Course introduction**

**Course Name: Modelling and simulation of Electrical vehicle using M ATLAB**

**Course duration: 4 - weeks**

**Organizing Department: Institutions Innovation Council**

**Collaborations: H & S dept., Center for Innovation and Social Transformation**

**Course offered by Electrical Vehicle club, Department of Electrical and Electronics Engineering**

**Venue: Virtual Mode**

**Speaker: Dr.T.V.V. Pavan Kumar , Associate. Prof., Dept. of EEE, KGRH**

**Srinivas D, Asst. Prof., Dept. of EEE , KGRH**

### **Engineering for sustainable development:**

The Engineering for Sustainable Development is a yearlong co-curricular program that is designed to introduce freshmen engineering students to the concepts of engineering design, principles of sustainable development and UN's Sustainable Development Goals (SDG's), entrepreneurial thinking, and emerging technologies in multi-disciplinary fields of engineering. The program is designed to help students become ethical and emphatic leaders who will reflect on the impact of engineering work on the environment and sustainability and develop an enhanced sense of social and civil responsibility. As a part of ESD program, a four week foundational course on emerging technologies is conducted. 3D printing is one among the emerging technologies taught as part of ESD. In the first semester 3D printing foundational course and in the second semester 3D printing advanced course is taught for the freshmen students.



### **Objectives:**

- To make a most simple and low run time vehicle model using individual component blocks
- To run the individual modules of vehicle model and integrate
- To check out performance parameters: SOC, Current, Speed with various driven cycles
- To know MATLAB model & their configuration to match with actual vehicle model

### **Outcomes:**

- Students has learnt about the simple and low run time vehicle model using individual component blocks
- How to run the individual modules of vehicle model and integrate Identified Real time battery charging management
- Checked out performance parameters: SOC, Current, Speed with various driven cycles
- Known the MATLAB model & their configuration to match with actual vehicle model

### **Resource Persons:**

Dr. T.V.V. PAVAN KUMAR, Associate professor, Officers – Exam branch, Department of EEE, KGR CET

Mr. D.SRINIVAS, Assistant Professor of EEE,KGR CET,

### **Faculty coordinator**

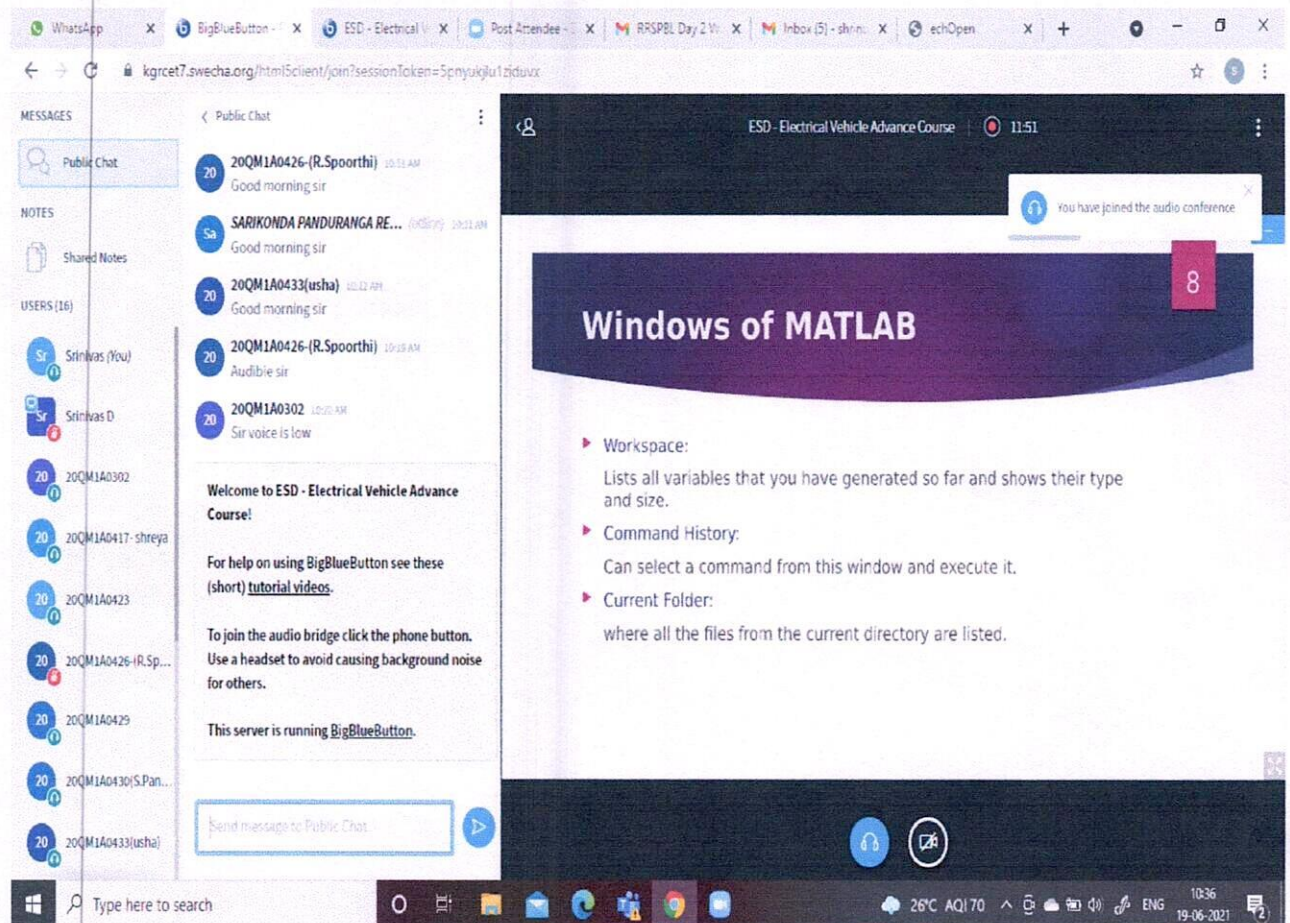
Mr. Srinivas D, Assistant Professor,

Department of EEE, KGR CET.



## Summary Report of Week - 1

Dr.T.V.V. Pavan Kumar has started Session with an Introduction to MATLAB and Importance of simulation. Simulink is a simulation and model-based design environment for dynamic and embedded systems, integrated with MATLAB. Simulink, also developed by MathWorks, is a data flow graphical programming language tool for modelling, simulating and analyzing multi-domain dynamic systems. He explained about what is MATLAB and how to use MATLAB for Various Applications.



The screenshot shows a BigBlueButton session interface. On the left, there is a sidebar with 'MESSAGES', 'NOTES', and 'USERS (16)'. The 'MESSAGES' section shows a 'Public Chat' with several messages from users like '20QM1A0426-(R.Spoorthi)', 'SARIKONDA PANDURANGA RE...', '20QM1A0433(usha)', '20QM1A0426-(R.Spoorthi)', and '20QM1A0302'. The 'NOTES' section shows 'Shared Notes'. The 'USERS' section lists participants like 'Srinivas (You)', 'Srinivas D', '20QM1A0302', '20QM1A0417-shreya', '20QM1A0423', '20QM1A0426-(R.Sp...', '20QM1A0429', '20QM1A0430(S.Pan...', and '20QM1A0433(usha)'. The main area displays a presentation slide titled 'Windows of MATLAB' with a list of topics: 'Workspace:', 'Command History:', and 'Current Folder:'. The bottom of the screen shows a Windows taskbar with various application icons and system information like '26°C AQI 70' and '19-06-2021'.

Dr.T.V.V. Pavan Kumar explaining about MATLAB



## Summary Report of Week - 2

Dr. T.V.V. Pavan Kumar has started Session with an Building of Mechanical block module in MATLAB Simulink opens with the Library Browser. The Library Browser is used for building simulation models.. To create a new model, click the new button on the Library Browser's toolbar. This opens a new untitled model window. He explained about how to build the mechanical blocks of Electrical Vehicles in MATLAB.

The screenshot displays a Zoom meeting interface. On the left, a sidebar shows a list of users: Srinivas (You), Srinivas D, 20QM1A0302, 20QM1A0417-shreya, 20QM1A0423, 20QM1A0426-R.Sp..., 20QM1A0429, 20QM1A0430-S. Pan..., and 20QM1A0433(usha). The main chat area shows a public chat with messages from 20QM1A0426-(R.Spoorthi) and SARIKONDA PANDURANGA RE... The chat also includes a welcome message for the 'ESD - Electrical Vehicle Advance Course' and instructions on how to use BigBlueButton. The right side of the screen shows a video feed of a presentation titled 'ESD - Electrical Vehicle Advance Course' with a timestamp of 02:12. The presentation content is partially visible, showing a slide with a large number '3' and some text.

Dr. T.V.V. Pavan Kumar Explaining about building of Mechanical Blocks.



## Summary Report of Week - 3

Srinivas D has started Session with an Building of Electrical block module in MATLAB Simulink opens with the Library Browser. Begin by dragging the required blocks from the library to the project window. Then, connect the blocks together which can be done by dragging connectors from connection points on one block to those of another.. He explained about how to build the Electrical blocks of Electrical Vehicles in MATLAB.

The screenshot shows a BigBlueButton web interface. On the left, there is a sidebar with a 'Public Chat' window and a list of users. The main area displays a MATLAB session with the following code and output:

```

>> B =
    2     7     4     2     7     4
    3     8     9     3     8     9
    1     6     7     1     6     7

>> size(B)
ans =
     3     6

>> max(B)
ans =
     3     8     9     3     8     9

>> min(B)
ans =
     1     6     4     1     6     4

>> A =
     2     7     4
     3     8     9
     1     6     7

>> diag(A)
ans =
     2
     8
     7

>> det(A)
ans =
    -40
  
```

A red box with the number 21 is overlaid on the right side of the MATLAB window.

Mr. Srinivas D Explaining about Electrical Blok modelling



## Summary Report of Week - 4

Srinivas D started session with Integration of Mechanical and Electrical blocks and Simulation of MATLAB model and discussion on simulation results. A Simulink model is a block diagram. Model elements are added by selecting the appropriate elements from the Library Browser and dragging them into the Model window. Alternately, you can copy the model elements and paste them into the model window. Run the simulation by pressing the 'Run' button, keeping all parameters default

The screenshot displays a web-based MATLAB session interface. On the left, a 'Public Chat' window shows a list of users and messages. The main area on the right is a MATLAB command window titled 'ESD - Electrical Vehicle Advance Course'. It contains the following MATLAB code and output:

```

>> B
B =
     2     7     4     2     7     4
     3     8     9     3     8     9
     1     6     7     1     6     7

>> size(B)
ans =
     3     6

>> max(B)
ans =
     3     8     9     3     8     9

>> min(B)
ans =
     1     6     4     1     6     4

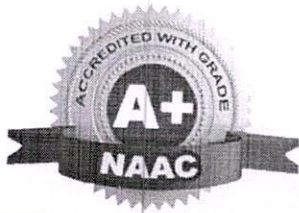
>> A
A =
     2     7     4
     3     8     9
     1     6     7

>> diag(A)
ans =
     2
     8
     7

>> det(A)
ans =
    -40
  
```

Integration of Mechanical and Electrical blocks and Simulation of MATLAB

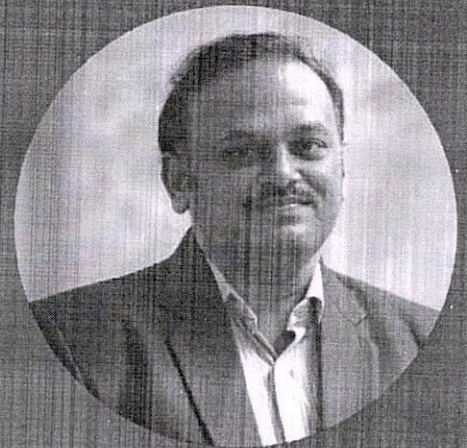




INSTITUTION'S  
INNOVATION  
COUNCIL

(Ministry for Education Initiative)

# ADVANCED COURSE ON "BUILDING OF MECHANICAL BLOCK MODULE OF E-VEHICLE"



**DR. T.V.V. PAVAN KUMAR**

Associate Professor,  
Dept. of Electrical and Electronics  
Engineering,  
KG Reddy College of Engineering  
and Technology

Organized by  
Institutions Innovation Council

In Association with  
Department of Humanities and Science,  
Centre for innovation and Social  
Transformation, Centre for Faculty and  
Students Professional Development



**KG REDDY**

College of Engineering  
& Technology

Engineering India's Changemakers

**26<sup>th</sup> June 2021**

**10.00 AM to 01.00 PM**

**Webinar Link :**


**[https://kgrcet5.swecha.org/  
b/sri-afo-cdj-kz2](https://kgrcet5.swecha.org/b/sri-afo-cdj-kz2)**

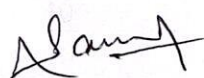


**ADVANCED COURSE ON**

**“MODELING AND SIMULATION OF ELECTRICAL VEHICLE USING MATLAB”**

S.No	Roll Number	Name of the Student	Presentation Marks (50)
1	20QM1A0101	C Venkat Reddy	38
2	20QM1A0302	Ghanate Vijay Kumar	40
3	20QM1A0402	Arige Venkatesh Surender Rahul	42
4	20QM1A0405	Banrapolu Bharath Reddy	41
5	20QM1A0409	Thanmai	43
6	20QM1A0416	Kancharla Niharika	44
7	20QM1A0417	Keshannagari Shreya	45
8	20QM1A0418	Kompelly Surya Prakash Goud	39
9	20QM1A0419	Kondapu Veera Venkata Vara Prakash Reddy	37
10	20QM1A0423	Patan Muzafar	38
11	20QM1A0425	R.Pranay Raj	42
12	20QM1A0426	Rikkala Spoorthi	48
13	20QM1A0429	Sama.Deepika	45
14	20QM1A0430	Sarikonda Pandurangareddy	41
15	20QM1A0433	T.Usha Rani	42
16	20QM1A0434	Thodeti Mounika	40
17	20QM1A0437	Tulasamolla Bhargavi	40
18	20QM1A0536	Jalagari Karthik	45
19	20QM1A0539	K Devraj	38
20	20QM1A0559	Mrutunjay Khatua	39
21	20QM1A0590	Suraj Kumar Singh	40
22	20QM1A6601	Afjal Ansari	42
23	20QM1A6636	Nukapelly Rishank Reddy	41

  
**Course Coordinator**

  
**Chairman**  
**HEAD**  
Dept. of Electrical & Electronics Engineering  
KG Reddy College of Engineering & Technology  
Chilkur (V), Moinabad (M), R.R. Dist-501 504.





# CERTIFICATE OF PARTICIPATION

Electrical Vehicle Club, Dept. of EEE  
In association with H & S Department

has attended the

Jalagani Karthik

This is to certify that Mr./Ms.

**"A FOUR WEEK ADVANCED COURSE ON MODELLING AND SIMULATION OF  
ELECTRICAL VEHICLE USING MATLAB"**

at K G Reddy College of Engineering and Technology from 19th Jun 2021 to 10th July 2021.

As a part of Emerging Technology Course under Engineering for Sustainable Development Program.

Srinivas D  
Coordinator

P. Samyuktha  
Chairman

Dr. R. S. Jahagirdar  
Principal



# CERTIFICATE OF PARTICIPATION

Electrical Vehicle Club, Dept. of EEE  
In association with H & S Department

This is to certify that Mr./Ms. Rikaka spoorku has attended the

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Chairman

*Dr. R. S. Jahagirdar*  
Principal