



2-day On-Campus Mentorship Workshop on  
**“Electric Vehicle Design, EV2019”**  
19-20, October 2019

Organized by  
**School of Electrical Engineering**  
**Vellore Institute of Technology, Vellore – 632014**

In association with  
**Imperial Society for Innovative Engineers**

### Who can Participate ?

- UG / PG Students & Research Scholars

### Registration Fees

- VITians - Rs. 1500/-
- Non VITians - Rs. 1800/-

### Registration Link

[http://info.vit.ac.in/Events-VIT/Electric\\_Vehicle\\_Design\\_2019/apply.asp](http://info.vit.ac.in/Events-VIT/Electric_Vehicle_Design_2019/apply.asp)

### Faculty Coordinator(s)

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**“Electric Vehicle Design, EV2019”**  
**Course Content**

| <b>Day-1 Saturday 19<sup>th</sup> October 2019</b> |   |                                       |             |
|--|---|---------------------------------------|-------------|
| <b>Session</b>                                     | <b>Topic covered</b>  | <b>Type of Lecture</b>                | <b>Time</b> |
| Session – 1<br>3 Hrs                               | Electric Vehicle System & Sub System <ul style="list-style-type: none"> <li>• Chassis</li> <li>• Traction System</li> <li>• Drive Train</li> <li>• Body</li> <li>• Safety &amp; Testing</li> <li>• Certification and EV Policies /</li> <li>• Market / Job / Opportunities</li> <li>• /Statics</li> </ul> | PPT + Video                           | 30 Minutes  |
|  | Case Study of Different EVs <ul style="list-style-type: none"> <li>• International Solar Car Team</li> </ul>  | Analytical + PPT + Video              | 20 Minutes  |
|  | EV Infrastructure <ul style="list-style-type: none"> <li>• Power Source for EV</li> <li>• Charging</li> <li>• Need of Renewable Energy</li> <li>• Resource</li> </ul>   | Analytical + PPT + Video              | 30 Minutes  |
|  | Solar Car Model for ESVC <ul style="list-style-type: none"> <li>• Challenges</li> <li>• Previous Year Teams Model</li> <li>• Case Study</li> <li>• Expected model</li> </ul>  | Analytical + PPT + Video + Case Study | 30 Minutes  |
|  | Q & A Session   | NA                                    | 10 Minutes  |
|  | Material for Chassis <ul style="list-style-type: none"> <li>• Selection</li> <li>• Welding Methods</li> <li>• Cutting Methods</li> </ul>  | PPT + Video                           | 30 Minutes  |
|  | Chassis <ul style="list-style-type: none"> <li>• Types</li> <li>• Design of Chassis</li> <li>• Forces Acting on Chassis</li> <li>• Affective Design of Chassis</li> </ul>   | Software + Calculation                | 30 Minutes  |
| Session – 2<br>3.5 Hrs                             | Chassis Analysis <ul style="list-style-type: none"> <li>• Static &amp; Dynamic Analysis</li> <li>• Accurate Analysis</li> </ul>   | Software + Calculation                | 90 Minutes  |
|  | Chassis Development for ESVC <ul style="list-style-type: none"> <li>• Rulebook</li> <li>• Dos &amp; Don'ts</li> </ul>   | PPT                                   | 20 Minutes  |
|  | Steering , Braking & Suspension <ul style="list-style-type: none"> <li>• Selection Method</li> <li>• Calculation</li> <li>• Lotus Analysis</li> <li>• Rulebook Compliances</li> </ul>   | Theory + Calculation + Hands-on       | 90 Minutes  |
|  | Q & A Session   | NA                                    | 10 Minutes  |



| Day-2 Sunday 20 <sup>th</sup> October 2019 |  |  |            |
|--|--|--|------------|
| Session                                    | Topic covered  | Type of Lecture                                      | Time       |
| Session – 3<br>3.0 Hrs                     | Drive Train & Its Components <ul style="list-style-type: none"> <li>• Motor &amp; Selection Method</li> <li>• Controller</li> <li>• Throttle Paddle</li> <li>• LV &amp; HV Harness</li> <li>• F-N-R Selector Switch</li> </ul>                                 | PPT +<br>Calculation +<br>Hands ON                   | 60 Minutes |
|  | Transmission <ul style="list-style-type: none"> <li>• Selection of Transmission for 3 /4 Wheel Vehicle</li> <li>• Calculation</li> <li>• Safety</li> </ul>   | PPT +<br>Analytical +<br>Calculation                 | 30 Minutes |
|  | Solar Power <ul style="list-style-type: none"> <li>• PV System</li> <li>• Solar Charge Controller</li> <li>• Solar Panel Mounting</li> </ul>   | PPT +<br>Analytical +<br>Calculation                 | 40 Minutes |
|  | Rulebook <ul style="list-style-type: none"> <li>• Rules Compliance</li> <li>• Safety Compliance</li> </ul>   | Theory   | 30 Minutes |
|  | Q & A Session  | NA   | 20 Minutes |
| Session – 3<br>3.0 Hrs                     | Traction System <ul style="list-style-type: none"> <li>• Battery Pack</li> <li>• BMS</li> <li>• Connectors</li> <li>• DC-DC Convertor</li> <li>• Selection Method</li> <li>• Dos &amp; Don'ts for Energy Storage System</li> </ul>                             | PPT +<br>Demonstration +<br>Analytical               | 60 Minutes |
|  | Traction System Rules & Safety <ul style="list-style-type: none"> <li>• IP67 Protection</li> <li>• Mounting</li> <li>• Battery Envelop (IP67 Protection)</li> <li>• Fire Wall</li> <li>• High Voltage</li> <li>• GLV &amp; NLV</li> <li>• Mountings</li> </ul> | PPT +<br>Demonstration +<br>Analytical +<br>Hands On | 30 Minutes |
|  | Protection <ul style="list-style-type: none"> <li>• Over Charge</li> <li>• Over Discharge</li> <li>• Temperature</li> <li>• Sensors</li> <li>• Cooling ( Natural / Air / Water /Force)</li> <li>• Cell Balancing / BMS</li> <li>• Integration</li> </ul>       | PPT +<br>Demonstration +<br>Analytical               | 30 Minutes |
|  | Autonomous Vehicle <ul style="list-style-type: none"> <li>• Method</li> <li>• Autonomous Features</li> <li>• Sensors &amp; Controllers</li> <li>• Guidelines for Autonomous</li> <li>• Round</li> </ul>  | PPT + Video  | 30 Minutes |
|  | Team management <ul style="list-style-type: none"> <li>• Report Writing ( Design, Cast ,</li> <li>• DVP, DFME , Electric etc)</li> <li>• Research Paper Writing</li> <li>• Finance &amp; Sponsorship</li> </ul>  | PPT  | 30 Minutes |