



# Electric Vehicle Course

Best Course for graduating candidates to start their career |  
curriculum designed by Industry Experts | 1 Month of Program |  
Hybrid Classes | World-Class Curriculum

Duration:  
**1 Month**

**ElectroCloud Labs**

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Starting its journey from 2012, ElectroCloud is a dynamic Learning and Development service providing company and it is currently a gargantuan repository of more than 200 courses from various fields and has served more than 5000+ clients across the world.

At ElectroCloud, we have collaborated with the topmost colleges, industries, and universities to design paid/funded one time courses, specializations which consist of :



lecture videos



reading materials



online graded quizzes



graded assignments



*At ElectroCloud, we promise updated, quality content that will help learners all over the world to add new skills and enrich their knowledge.*

*Anshu Pandey*

CTO



## Table of content for Electric Vehicle Workshop

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### Module 1

### Introduction to Automobile Engineering

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- Basic systems used in any vehicle Concept of traction
- Coefficient of friction
- Tractive force
- Tires
- Compounds of tire, Tread patterns of tire
- Deciding a suitable tire for a specific case



## Table of content for Electric Vehicle Workshop

### Module 2 Suspensions Systems

- Role of suspension in traction
- Types of the suspension system
- Dependent suspension system
- Independent suspension system
- Coil spring suspension system
- Leaf spring suspension system
- Hydraulic suspension system
- Pneumatic suspension system
- Adaptive suspension
- Smart Suspension
- Damping system
- Deciding suitable suspension for a specific case



## Table of content for Electric Vehicle Workshop

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### Module 3 Chassis Systems

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- Types of chassis
- Materials used to make chassis
- Conventional motorbike chassis
- Perimeter Chassis
- Trellis chassis
- Ladder frame type chassis
- Integrated chassis
- Strength of chassis
- Crash test
- Full frontal crash
- Offset frontal crash



## Table of content for Electric Vehicle Workshop

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### Module 4 & 5: Swing arm & Steering System

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- Module 4 & 5: Swing arm & Steering System
- Types of the swing arm
- Round cross-section type swing arm
- Rectangular cross-section type swing arm
- Oval cross-section type swing arm
  
- Types of the steering system
- General steering
- Hydraulic power steering
- Electric power steering
- Steering ratio



## Table of content for Electric Vehicle Workshop

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### Module 6: Brake System

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- Types of brake system
- Drum brake system
- Disc brake system
- Solid rotor
- Cross drilled rotor
- Petal disc rotor
- Ventilated disc
- Carbon disc rotor
- Brake test



## Table of content for Electric Vehicle Workshop

### Module 7: Vehicle Dynamics

- Rolling
- Pitching
- Load transfer
- Mass transfer
- Mass transfer calculation
- Centrifugal forces
- Leaning of vehicles on corners
- Capability of different vehicles to lean
- Castor angle and its effects
- Camber angle and its effects
- KPI and its effects
- Introduction to Vehicle Aerodynamics
- Drag force
- Calculation of drag force
- Calculation of required horse power to overcome drag force at high speeds
- Lift force
- Calculation of lift force
- Rear wing/spoiler
- Lip spoiler
- Air dams
- Diffusers
- Double DRS





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### Module 8: Vehicle Mechatronics

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- Sensors
- ECU/ECM/BCM
- Actuators
- CAN Bus
- ABS
- EBD
- ESP
- Traction Control
- Uphill Control
- Downhill assist
- Lane assist
- Launch Control
- Anti-wheelie control
- Active suspension
- Seat belt
- Pretensioner
- Air bags
- Crumple zone



## Table of content for Electric Vehicle Workshop

### Module 9: Vehicle Design Concepts

- Selecting vehicle type to be designed
- Motorbike design basics
- Ground clearance decision
- Seat height decision
- Sitting layout decision
- Wheel base decision
- Rake angle decision
- Chassis type selection
- Drawing body line
- Drawing motorbike shape from front, side & top views
- Car design basics
- Gound clearance decision
- Sitting layout decision
- Wheel base decision
- Wheel track decision
- Chassis type decision
- Drawing body line
- Drawing car shape from front, side & top views



## Table of content for Electric Vehicle Workshop

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### Module 10: Introduction to Electric Vehicle

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- Understanding Battery
- Types
- Popular Battery Chemistries
- Understanding Role of Controller
- Understanding role of B.M.S.
- Knowing why transmission is eliminated from EVs
- Ease in putting Traction Control in EVs
- Ease in putting KERS/RGBS in EVs
- Minimizing Thermal Hot Spot in Battery
- Advantages of EV over I.C.E. vehicle
- Comparison of Energy Density
- Understanding Technology TESLA & TATA
- Understanding Technology of SELF DRIVING CARS



## Table of content for Electric Vehicle Workshop

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### Module 11 & 12: Real-Time Working on eVehicle

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- Working on Solid Work
- Designing and Simulation on Solid Works
- Working on real time EV



Curiosity is a force, a force that drives us towards the path of exploring new things. At times, when we stumble on the path, we draw back from our quest and this is a scenario where hundreds of students all over the globe lose their will to learn a particular skill when they do not find the right resource.

We at ElectroCloud spend thousands of hours & work with experts from Industry to design qualitative courses to make the right learning opportunity available to students.

Team ElectroCloud is working their best to provide help to every learning enthusiast out there so that they can achieve their goals and make good use of what exists in technological world.

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# *Photographs from last event*

