



## **Electric Vehicle Designing And Manufacturing**

**Duration:- 6 Weeks**

### **Course Content**

#### **Designing By Using CATIA OR Solidworks**

##### **CATIA**

- INTRODUCTION TO THE COURSE
- ENGG. DRAWING-PAPER, PENCIL, MARGINE, TITELBOX, SCALING
- ANGLE OF PROJECTION CONCEPT, GENERATION, SYMBOLE
- TYPES OF VIEWS (ISOMETRIC, DIAMETRIC, SECTION VIEW, TRIMETRIC VIEW, ORHOGRAPHIC VIEW).
- INTRODUCTION TO THE WORKSPACE
- LINE, ARC, CIRCLE(FULLY-CONSTRAINT )EXERCISES.
- MIRROR, TRIM, EXTEND
- COPY, MOVE, ROTATE...EXERCISES
- PAD, POCKET, SHAFT, GROOVE
- SOLIDCOMBINE, PAD, POCKET, SHAFT
- RIB, SLOT, PLANE CREATION, MULTI SEC. SOLID
- PROJECT CURVE, MIRROR FEATURE
- HOLE & SUB-OPTION OF HOLE
- 3D-PATTERN FEATURE, DRESS-UP FEATURE
- DRAFTING, DIMENSIONING & SYMBOL.



- INTRODUCTION TO DRAFTING VIEW GENERATION, DIMENSION PLACING.
- GD&T
- NOMINAL TOLLERANCE & ROUGHNESS, FIT
- TOLLERANCE, GD&T PLACING, DATUM FEATURE, SECTION VIEW
- ASSEMBLY DRAFTING, BALOON GENERATION, BILL OF MATERIAL, EDIT SHEET BACKGROUND
- ASSEMBLY(BOTTOM-UP & TOP-DOWN)
- KINEMATICS
- SURFACING
- SHEETMETAL
- PROJECT AND PRACTICE
- GOLF CART DESIGNING & ASSEMBLY
- DESIGN ON BIKE COMPONENTS

## **SOLIDWORKS**

- INTRODUCTION TO THE COURSE
- ENGG. DRAWING-PAPER, PENCIL, MARGINE, TITELBOX, SCALING
- ANGLE OF PROJECTION CONCEPT, GENERATION, SYMBOLE
- TYPES OF VIEWS (ISOMETRIC, DIAMETRIC, SECTION VIEW, TRIMETRIC VIEW, ORHOGRAPHIC VIEW).
- INTRODUCTION TO THE WORKSPACE
- INTRODUCTION TO CONSTRAINT [CONCEPT, GEOMETRICAL, DIMENTIONAL AND COLOUR].
- LINE, ARC, CIRCLE(FULLY-CONSTRAINT )
- MIRROR, TRIM, EXTEND



- COPY, MOVE, ROTATE.
- FILLET, CHAMFER.
- 2-D PATTERN FULLY CONSTRAINT.
- EXTRUDE, REVOLVE, SELECTION PROCEDURE.
- PLANE CREATION, LOFT, SWEEP.
- PLANE CREATION, MIRROR FEATURES
- HOLE WIZARD
- PATTERN FEATURE(3-D), RIB, SHELL, FILLET, CHAMFER
- INTRODUCTION TO DRAFTING.
- GD&T
- NOMINAL TOLLERANCE & ROUGHNESS,FIT
- TOLLERANCE, GD &T PLACING, DATUM FEATURE, SECTION VIEW
- ASSEMBLY DRAFTING, BALOON GENERATION, BILL OF MATERIAL, EDIT SHEET BACKGROUND
- ASSEMBLY(BOTTOM-UP & TOP-DOWN)
- SHEET-METAL
- PUNCHING, MOSQUITO COIL
- SHEET-METAL (DRAFTING, WELDING SYMBOL, UNBENT VIEW)
- WELDMET
- SURFACING
- PRATICAL AND PROJECT
- GOLF CART DESIGNING & ASSEMBLY
- DESIGN ON BIKE COMPONENTS



## **MANUFACTURING TECHNOLOGY & VEHICLE DYNAMICS**

### **MANUFACTURING TECHNOLOGY:-**

- BASIC OF MANUFACTURING
- SAFETY TOOLS
- HAND TOOLS AND MACHINE TOOLS AND CUTTING TOOLS
- MOULDING TECHNOLOGY,TYPE OF MOULDING TECHNOLOGY
- MATERIALS AND PARAMETERS
- CUTTING AND HEXING
- DRILLING
- WELDING,TYPE OF WELDING
- GAS WELDING,TIC WELDING,ARC WELDING
- PARAMETERS REQUIRED FOR WELDING
- SHEET-METAL OPERATION(NUCHING BLANKING)
- PUNCHING,BENDING
- GEARS AND TYPE OF GEARS
- PARAMETER FOR MANUFACTURING GEARS,
- FINISHING OPERATION (POLISHING,ADDITIVE FINISHING,PAINTING)

### **BASIC COMPONENTS & VEHICLE DYNAMICS:-**

- BREAKING SYSTEM
- DIFFERENTIAL AND ITS WORKING
- TRANSMISSION SYSTEM
- VEHICLE DYNAMIC
- VEHICLE GEOMETRY
- CALCULATION FOR CHASSIES STIFNESS
- STEERING ASSEMBLY AND JOINTS AND WORKING
- SUSPENSION SYSTEM



- VEHICLE PACKING
- SIMULATION AND ANALYSIS OF FULL VEHICLE

## **ELECTRIC VEHICLE WITH GOLFCART MANUFACTURING**

### **ELECTRIC VEHICLE**

- INTRODUCTION TO EV(HISTORY,TYPE,MARKET CONDITION,INDIAN MARKET CONDITION)
- MAJOR COMOPONENTS,HOW EV WORKS,TYPE OF EV
- BATTERIES,TYPE OF BATTERIES, LITHIUM ION BATTERY,LEAD ACID BATTERY
- MOTORS,TYPE OF MOTORS,AC MOTORS
- DC MOTORS,BLDC MOTORS,HUB MOTORS
- PMSC MOTORS AND WORKING
- INDUCTION MOTORS AND WORKING
- MOTOR AND BATTERY SUITABLE FOR GOLFCART
- DC CONTROLLER,BUCK CONVERTER
- CONTROLLER,AC CONTROLLER
- WORKING PRINCIPLE OF CONTROLLER
- TYPE OF BATTERY MANAGEMENT SYSTEM
- FUNCTIONS OF BATTERY MANAGEMENT SYSTEM
- EV CHARGER
- EV CHARGING STATIONS AND INDIAN MARKET
- INTRODUCTIOIN TO HEV(HISTORY,TYPE,MAJOR COMPONENT)
- TYPES OF HEV IN INDIAN MARKET AND THEIR RESPONSES
- TYPE HEV POWERTRAIN
- INTRODUCTION TO FULECELL EV
- TYPE OF FULECELL EV
- CIRCUIT DIAGRAM OF GOLFCART

### **MANUFACTURING OF GOLF CART**



- METAL CUTTING OF CHASSIS OF GOLFCART
- WELDING OF CHASSIS OF GOLF CART
- POLISHING OF CHESSIES,POWDER COATING
- PAINTING OF CHESSIES
- MOULDING OF GLASS FIBERS OF EV BODYPARTS
- POLISHING PAINTING OF FIBER PARTS
- CUTTING OF SHEETMETAL
- WELDING OF SHEETMETAL TO THE CHASSIES FRAME
- CUTTING AND WELDING OF BODY FREAME
- CUTTING OF ROOF SHEETMETAL, PUNCHING BENDING OF SHEETMETAL
- POLISHING AND PAINTING OF ROOF TOP
- ASSEMBLING OF REAR DIFFERENTIAL
- ASSEMBLING OF MOTOR,LEAPSPRING
- ASSEMBLING OF FRONT AXIAL
- ASSEMBLING OF WHEEL
- ASSEMBLING OF BREAKING SYSTEM
- WELDING OF SIT FREAMES,BATTERYHOUSING
- ASSEMBLING OF MOULDED FIBER BODY PART
- ROOFTOP MOUNTING, AND BODYMOUNTING
- STEERING MOUNTING WITH THE THE FRONT AXIAL
- WIRING HARNESS ,CONNECTION OF MOTOR ,BATTERY AND CONTROLLER
- LIGHT KEY INDICATOR AND OTHER ELETRONIC CONNECTION
- TESTING ASD MODIFICATION AND MATING STICKERING FINAL POLISHING
- COMPLETE TESTING OF GOLFCART AND RUNNING