



Workshop on Automobile Mechanics & IC Engine Design

A two days workshop on Automotive Engine Design. All the concepts are explained in detail with the Help of Theory and With Specially Designed Animations which would help students to visualize Things before practically working on it.

Team AutoSPARK

- o AutoSparx team members were a part of the Solar Car Team that Participated in the South African Solar Challenge.
- o Currently our teams are working on a single seated battery driven vehicle to be used for short distance travelling

Topics to be covered in AutoSPARK Workshop

Introduction

- What is an automobile?
- Brief history
 - o Changes over the years
 - o Indian automobile industry
 - o Sigma ratings

Brief history

- o Changes over the years
- o Indian automobile industry
- o Sigma ratings

Types of locomotive vehicles

Chassis design

o Brief terminology

1. MULTI POINT STRUT BAR
2. FENDER BAR
3. ANTI ROLL BAR
4. MONOCOQUE
5. TUBULAR SPACE
6. LONGERON RH,LH

o Types of chassis

1. LADDER FRAME CHASSIS
2. TUBULAR SPACE FRAME CHASSIS
3. MONOCOQUE FRAME CHASSIS
4. ULSAB MONOCOQUE
5. BACKBONE FRAME CHASSIS
6. ALUMINIUM SPACE FRAME
7. CARBON FIBRE MONOCOQUE

All these will be explained with their current applications and the advantages & disadvantages in various applications.

Suspension Unit

o Brief terminology

1. Weight transfer (sprung and unsprung)
2. Jacking forces
3. Camber and caster angle
4. Anti dive & anti squat
5. Spring Rate
6. Travel

o Types of suspensions

1. Dependent suspension
2. Independent suspension

o Front Independent Suspensions

1. McPherson Strut
2. Double wishbone
3. Coil Spring type1
4. Coil spring type2
5. Multi link type
6. Trailing arm suspension
7. I beam suspension

o Rear suspension - dependant systems

1. Solid-axle, leaf-spring
2. Solid-axle, coil-spring
3. Beam Axle

o Hydragas Suspension

o Hydropneumatic Suspension

o Progressively wound springs

o Torsion bars

Braking Unit

- o Disc brakes

1. Self adjusting nature
2. Disc damage modes
3. Servicing your disc

- o Drum brakes

- o Anti-lock braking system

1. Four-channel, four-sensor ABS
2. Three-channel, three-sensor ABS
3. One-channel, one-sensor ABS

- o Brake Actuators

1. Cable-operated
2. Solid bar connection
3. Single-circuit hydraulic
4. Dual-circuit hydraulic
5. Brake-by-wire

- o Power Brakes and master cylinders

- o Brake fluids

Special Queries Session

Why Us?

This workshop will be beneficial for students in following ways:

- o Firstly, the workshop gives a student an insight of the Automobile Industry , 3D modelling Theory Behind super mileage vehicle Solar car , ATV etc. if you have the interest to be the part of one then this surely is the place to be at to get the firsthand experience of working on high end projects.
- o The 3D modelling sessions will be really helpful for them to get started with the basics of AutoCAD and Catia V5 for which they have to pay 10-20k in the market

and still end up with nothing.

- o Sessions of power point presentation and Live Demonstration and real time videos.

- o Introduction of Latest technology like PGMFi,DTSi ,MPFI,CRDI etc.

- o Also the workshop doesn't end up then and there. They can contact the concerned faculties throughout their graduation or thereafter also if they need any guidance regarding industrial Projects and Placements.

- o For Live Demonstration we bring our own 110 CC Honda Engine

Benefits in Careers Aspects

- o Receive an unparalleled education from HOrizon team with personal one-on-one attention.

- o HOrizon certification programs are recognized in industry.

- o Improve job prospects and get an edge over your counterparts.

- o Access to our Inventory at minimal rate.

- o 100% Placement assistance.

Duration

The duration of this workshop will be two consecutive days, with eight hour session each day in a total of sixteen hours properly divided into theory and hands on sessions

Certification

A '**Certificate of Participation**' by HoriZON (An Unit of MBS Group) to all Participants of this workshop. At the end of this workshop, a small competition will be organized among the participating students and winners will be awarded with a '**Certificate of Merit**'

Eligibility

t's a basic level workshop so there are no prerequisites. Anyone interested, can join this workshop.

Fee

Rs 1000/- (inclusive of all Taxes)per participant