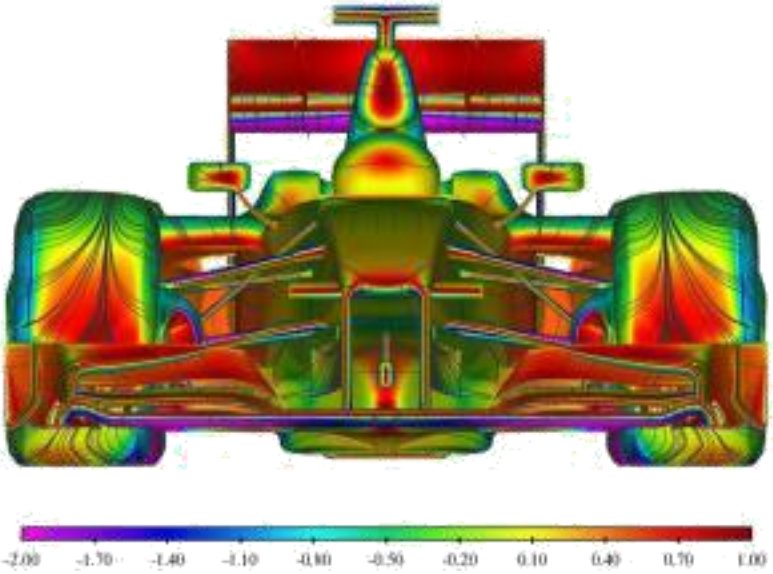

Automobiles & IC Engines

(AutoNEX – 2 Days)

2 Days Workshop | 14-15 February 2019 | IIT (BHU) Varanasi

EISYSTEMS SERVICES
FF-113, Express Greens Plaza, Sector 1, Vaishali – Ghaziabad -201010
W: www.eisystems.in **| P:** (+91) 977 3976 977 | **E:** technex@eisystems.in

Prerequisites & Eligibility

- This is a basic level workshop.
- The course and curriculum of this workshop is more inclined towards Mechanical Engineering / Automobiles / Production department however anybody can join this workshop even from different department.
- Participants are expected to bring their laptop (Windows Platform only)
- Mode of Training/Teaching will be English only.

Workshop Fees, Certification & Kit Deliverables

- Workshop Fees: Rs. 1000 per participant.
- Certification from Technex IIT BHU Varanasi and EISystems Services.
- EISystems Technex Summer Internship & Training Voucher of Rs. 1000.

Note

All of the participants registering for any Technex workshop will be required to pay Technex Registration charges along with workshop charges to get eligible for joining the workshop.

Content Outline

Session 1: Automobile & Designing Session

(Expected Session Duration: 1.5- 2.0 hours with Presentations, Demonstrations etc)

1. Introduction to Automobile Mechanics
2. Locomotive Vehicles
3. Chassis design

Brief terminology

1. Multipoint Strut Bar
2. Fenderbar
3. Anti Roll Bar
4. Monocoque
5. Tubular Space
6. Longeron RH,LH

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

Session 2: Suspension Session

(Expected Session Duration: 1.5- 2.5 hours with Presentations, Demonstrations etc)

Suspension Unit

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

Types of suspensions

1. Dependent suspension
2. Independent suspension

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

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

Hydragas Suspension
Hydropneumatic Suspension
Progressively wound springs
Torsion bars

Session 3: Braking Unit Session

(Expected Session Duration: 1- 1.5 hours with Presentations, Demonstrations etc)

Braking Unit

Disc brakes

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

Drum brakes

Anti-lock braking system

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

Brake Actuators

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

Session 4: Transmission Session

(Expected Session Duration: 2- 2.5 hours with Presentations, Demonstrations etc)

Transmission system

Manual transmission

1. Gear ratio
2. Different types of gear
3. Clutch & its components
4. Reverse & its working

Automatic transmission

1. Planetry gearsets
2. DSG / DCT

Gearboxes Torque Converters

1. Semi automatic Transmission
2. Continuously variable transmission

Session 5: Differential & Traction Session

(Expected Session Duration: 2- 2.5 hours with Presentations, Demonstrations etc)

Differentials

Differentials

Open Differentials

Limited-slip differentials

Locking differentials

2WD, 4WD, AWD

Tyres and Traction Control

Tyre size notations
Tyre types for passenger cars
Tyre constructions
- Cross-ply construction
- Radial construction

Tyre tread
Traction & its control

Session 6: IC Engine Session

(Expected Session Duration: 3- 3.5 hours with Presentations, Demonstrations etc)

IC Engines

Types
- Compression ignition
- Spark ignition

Layout
Engine balancing
Spark plug
Carburettor
Fuel injector
Valves & valve timing
Valve trains
Engine cooling
Turbochargers
Superchargers
Air/Fuel ratios

Wankel Engine (6 stroke)

Session 7: Electronics & Safety Session

(Expected Session Duration: 1 – 1.5 hours)

Engine Sensors
Microcontrollers and applicable sensors
Electronics Usage and Feedbacking for vehicle analysis and control
Airbag System
Seat Belt System

Disclaimer
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