



## MAEER's MAHARASHTRA INSTITUTE OF TECHNOLOGY, PUNE



2-Day Workshop on  
AUTOMOBILE & VEHICLE DYNAMICS



## **AIM :-**

We started this program to spread knowledge and awareness among students as well as college officials that what actually is the industries requirement and decreasing the gap between students and industries and make the students industry-ready when he/she graduate.

To give students a head start as they begin to design their cars for BAJA-SAE / SUPRA-SAE/F-SAE events.

## **DESCRIPTION OF WORKSHOP :-**

This workshop will give an insight to the students about actual designing & working of vehicle through proper practical sessions.

Whole vehicle will be disassembled & reassembled during the workshop. Students will be benefited in their academics & paves their paths easier to represent in international & national competitions like BAJA,SUPRA,GOKARTING, EFFICYCLE etc.

If you have a passion for automobile and high speed racing cars this is the place where you are destined.

## **MAIN HIGHLIGHTS OF WORKSHOP :-**

This workshop will be divided into 3 parts:-

- Static
- Dynamics
- Practical

**1) Static:** - In this part we will be discussing static parts of automobile that how each and every component works.

- Fundamentals of chassis design
- Suspension system
- Engine working and fundamentals.

**2) Dynamics:** - In this part we will be discussing dynamics of automobile in deep.

Steering dynamics

- Derivation of drifting equation and turning equation
- Designing parameters for suspension designing.
- Braking performance triangles

**3) Practical:** - this will be the implementation of the things that we will learn in above two parts. In this part students will learn how to design a suspension and a engine.

Day	Topic
Day-1	<ul style="list-style-type: none"><li>➤ Introduction to "Automobile engineering"</li><li>➤ Difference b/w Super , ATV, sports , formula car</li></ul>
	<ul style="list-style-type: none"><li>➤ Chassis</li><li>➤ Goals of chassis</li><li>➤ <b>Types of chassis:- a) Monocoque b) Ladder frame c) Space-frame d) Back-bone chassis</b></li><li>➤ Types of cars based on that</li><li>➤ <b>Different " Pillars" in cars( A, B,C,D pillars)</b></li><li>➤ Concept of pillars and boxes in a sedan, SUV, hatchback.</li></ul>
	<ul style="list-style-type: none"><li>➤ Rigidity and uses of different types of chassis</li><li>➤ Suspension system for SUPRA-SAE</li><li>➤ Types of suspension springs</li><li>➤ Uses and applications of each</li><li>➤ Concept of all terms related to suspension designing</li></ul> <p><b>( Camber / Caster / king pin inclination/ toe angle / bump &amp; Rebound/ spring rate / camber thrust / jacking forces)</b></p>
	<ul style="list-style-type: none"><li>➤ Types of dampers and application</li></ul>

	<ul style="list-style-type: none"> <li>➤ Suspension mechanisms</li> <li>➤ Equal and parallel</li> <li>➤ Unequal and parallel</li> <li>➤ <b><i>Unequal and unparallel</i></b></li> </ul>
	<ul style="list-style-type: none"> <li>➤ Tire slip angle</li> <li>➤ Scrub radius</li> <li>➤ Tire mechanism</li> <li>➤ Tire nomenclature</li> </ul>

<b>Day-2</b>	<ul style="list-style-type: none"> <li>➤ Steering mechanism</li> <li>➤ Types of steering mechanism</li> <li>➤ Co-ordinate system for mechanism</li> <li>➤ Euler angles</li> <li>➤ Turning radius</li> <li>➤ Cornering stiffness</li> <li>➤ Slip angle</li> <li>➤ Steering ratio</li> </ul>
	<ul style="list-style-type: none"> <li>➤ Derivation of turning equation</li> <li>➤ Concept of understeer and oversteer</li> <li>➤ Concept of drifting</li> <li>➤ Braking mechanism</li> <li>➤ Braking dynamics</li> <li>➤ Braking performance triangles.</li> </ul>
	<ul style="list-style-type: none"> <li>➤ Basics of Engine Working</li> <li>➤ Components of engine</li> <li>➤ Designing Parameters of engine</li> <li>➤ Practical session</li> </ul>

**CERTIFICATION:-**

All the participating students will be given "Certificate of Participation" and 5 students will get "Certificate of Appreciation" (on basis of a test taken at the end of workshop) issued by "ELITE-TECHNO Groups"

**COURSE FEE:-**

Course fee of this complete course including kit will be Rs. 1100/- per student.

**CONTACT DETAILS :-**

AJIT MOHEKAR :- +919545700733

SANKET PATIL :- +919096211699