

Introduction

Applied mechanics and mathematics utilized in vehicle modeling
Vehicle axis systems, centre of gravity, loads, inertias

Vehicle Dynamics

Longitudinal Dynamics

Dynamic axle loads at acceleration or deceleration
Traction limited acceleration, climbing, traction control
Traction limited braking, brake stability
Brake forces distribution
Vehicle resistances and engine output requirements

Vertical Dynamics

Vibration, noise classification, propagation and phenomenon's
Simple vertical dynamics modeling
Road excitation
Suspension springing and shock absorbing

Lateral Dynamics

Lateral acceleration, forces and slip angle
Low speed cornering
Vehicle under-steering, over-steering and self steering
Vehicle stationary and non-stationary cornering, line change
Lateral dynamics modeling

Interaction between longitudinal, vertical and lateral vehicle dynamics

3-Dimensional interaction
Vehicle pitch and roll motions and General considerations
Vertical Force Variations
Braking, accelerating while cornering, braking on split μ surface
Vehicle Dynamics Target Conflicts

Chassis systems in vehicle dynamics

Suspension design, classification, kinematics and elastokinematics
Introduction to brake systems, and importance in vehicle dynamics
Introduction to tire as major system in vehicle dynamics

Visit to Continental NA Development Center in Auburn Hills