OPTIMUMG
vehicle dynamics solutions

Applied Vehicle Dynamics Seminar
January 28—January 31, 2019
Kumaraguru College of Technology • Coimbatore, India

Claude Rouelle, OptimumG Owner & President

40 Years of Experience in Applied Vehicle Dynamics Shared in 4 Days

Claude Rouelle, president of OptimumG, has conducted over 300 international seminars for automotive companies as well as university courses for more than 13,000 engineers in 34 different countries.

This training seminar will focus on applied vehicle dynamics to car concept, simulation, design, manufacturing, testing, and development. We'll cover every aspect of vehicle dynamics. Each participant will receive a binder with approximately 800 pages and several spreadsheets of exercises.

Specifics:

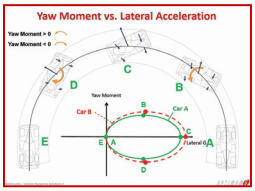
- Seminar hours: 8:00 a.m. - 8:00 p.m.
- Seminar is only open to students, who will be required to provide a current student ID.
- Registration opens October 8 and closes January 4.
- Registrations received after January 4 are accepted with a 150% fee.
- No registrations are accepted after January 18.
- Only one payment per university.
- Payments can be made by credit card or bank transfer only.
- Participants are responsible for their own transportation, lodging, and meals.
- The university will offer lodging at the rate of RS.500 per day/per person.

Pricing Information:
(Amounts shown in US dollars)

# Attendees	Amount
1	$455.00/student
2-3	$305.00/student
4-6	$275.00/student
7-9	$245.00/student
10-12	$215.00/student
13-15	$185.00/student
16+	$160.00/student

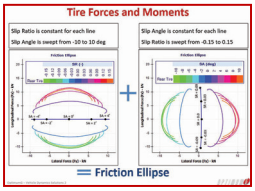
For more information, contact susanne.chastain@optimumg.com

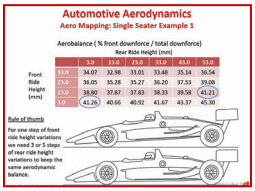
Covered Topics



Performance Definition: What makes a car go fast as well as safe and comfortable in a corner, and what allows a car to brake better and accelerate in and out of a corner with good driver feedback? As a short introduction to the seminar, participants will share their perspectives on steady state and transient performance definition.

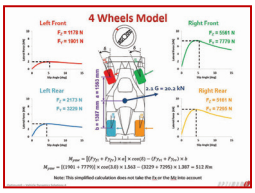
Tires: Understand "why" and "how much" the grip, balance, and performance of a car is decided by the forces and moments generated in the tire contact patch. We'll study the influence of lateral and longitudinal slip, vertical load, camber, speed, pressure, and temperature as well as these combined inputs on tire performance. We'll also cover in-lab and on-track tire testing methodologies, tire test data analysis, and tire modeling as well as the benefits and limitations of tire models as input of vehicle dynamics simulation software.

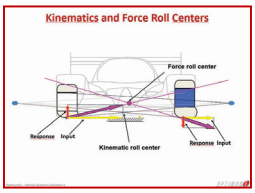




Aerodynamics: After a review of aerodynamics basics, we'll focus on understanding static and dynamic effects of aeromaps (drag, lift, balance, stability) and how to integrate them into the car design and exploitation.

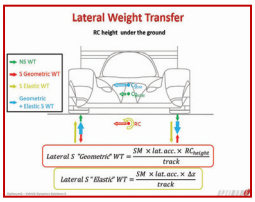
Steady State Fundamentals: The review of simple equations of motion will focus on the definition and quantification of understeer and oversteer behaviors. Practical meaning of these equations will help us to evaluate the contribution of car yaw angle, yaw rate, and steering to lateral acceleration and yaw moment.

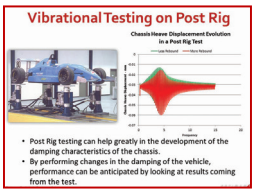




Kinematics and Compliance (K&C): From the design to on-track testing and tuning, understanding the effects of kinematics and compliance is essential to the efficient use of tires. Examples of tire model exploitation for suspension camber variation and steering kinematics design will be given. We will also explain the essential differences between pure kinematics and force based roll and pitch centers.

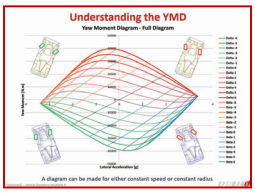
Weight Transfer: Understand, step-by-step, the weight transfer calculations in steady state. See the influence of springs, anti-roll bars, and kinematics on weight transfer distribution as well as the influence of tire vertical stiffness and chassis torsional stiffness. You will get a guided exercise on weight transfer calculations under combined lateral and longitudinal accelerations.





Damping, Ride, Transient Weight Transfer, and Tire Grip Consistency: After a brief description of damper technology, we'll focus on the damper settings' influence on tire load, tire load consistency, tire temperature, grip, and wear. A guided exercise related to heave, roll and pitch stiffness and damping as well as theoretical and empirical dampers fine-tuning methodology will help participants considerably diminish the amount of time spent in testing.

Balance, Grip, Control, and Stability: We'll share how the yaw moment vs. lateral acceleration method can successfully be applied by integrating three different inputs: simulation results, objective analysis from acquired data, and subjective driver appreciations through specific driver debriefing method. With scientific demonstration and real examples, we'll explain how the choice of car setup parameters and driving style influence the car performance and response for given drivers, circuits, and track conditions.



OptimumG, a vehicle dynamics consulting firm, helps clients enhance their understanding of vehicle concept, simulation, design, testing, development, and analysis from truck to race car vehicles through seminars, consulting, and software development.

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6450 S. Quebec St., #5-28
Centennial, CO 80111 USA
+1 303 752 1562

10/12 Rue Mil Neuf Cents
L-2157 Luxembourg
www.optimumg.com