

# Vehicle Dynamics & Data Acquisition Seminar

**February 25 - 27, 2011 at AVIO RACE S.L.R.** (Vignola, Italy)

Get a head-start as you begin to design or set-up your car for the next competition. This seminar will arm you with all the information you need to reach the finish line faster and smarter.

To register for the seminar, visit [www.optimumg.com](http://www.optimumg.com)

**Price before January 25**  
Individual \$1,550 USD  
Group of 3 or more \$1,250 USD

**Price after January 25**  
Individual \$1,850 USD  
Group of 3 or more \$1,550 USD

\*price includes a 500 page binder

register soon  
— *seats go fast*

Gain 30 years of experience in just 3 days.

Claude Rouelle has worked as a race engineer, technical advisor and manager on dozens of circuits and rallies including the European Rally Championship, European Touring Car Championship, French Formula 3, Japanese F3000, Formula One and the CART series. In 1997, he created OptimumG, a consulting company that specializes in race car engineering and data acquisition through software development, consulting services and seminars.



# subjects covered

**Tyres** The only elements of your car in contact with the ground, understand why and how much the grip, balance and performance of a car is decided by the contact patch forces and deflections. We will also cover tyre testing, analysis and how to use tyre data in car design and setup.

**Aerodynamics** After a review of aerodynamics basics, we'll focus on the understanding of aero-maps, wings, gurney flaps, static and dynamic ride height settings, and how to integrate them into the design of a suspension.

**Kinematics** See why poorly designed kinematics cannot be "patched" by springs, antiroll bars and shocks. And why, from the design to on-track testing and racing, understanding the effects of kinematics is essential to the efficient use of tyres. We'll also explain the essential differences between kinematic and force roll centers, as well as kinematic and force pitch centers.

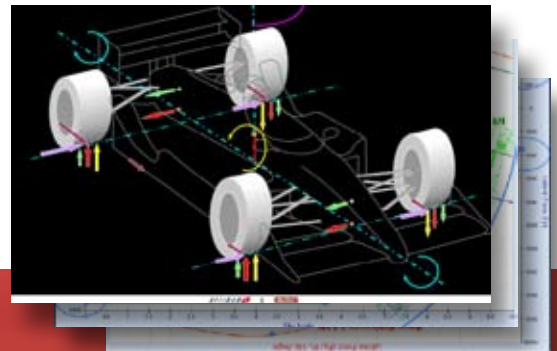
**Steady state weight transfer** Understand, step-by-step, the weight transfer calculation in steady state. See the influence of springs and anti-roll bars on weight transfer distribution, as well as the influence of tire vertical stiffness and chassis torsional stiffness. You will get a guided exercise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

**Shocks, ride and transient weight transfers** After a brief description of damper technology, we will focus on the damper settings' influence on tire load, tire load consistency and racecar performance. A guided exercise related to spring and damping calculations, as well as selection and fine-tuning of these suspension elements will help you to considerably diminish the amount of time spent in testing and improve your understanding of simple simulation tools.

**Data acquisition** Hear both technical and practical aspects of data acquisition used to develop car and driver performance. This knowledge will help you to appreciate the challenges and the satisfactions you face with data acquisition system understanding, choice, installation and calibration, as well as efficient data analysis. We will focus on mathematical data analysis and its direct application to race driver performance, and car tyre performance and endurance evaluation.

## **Car design, tuning modification and chassis setup**

Young and experienced car engineers alike have gotten new ideas, new engineering principles and new perspectives related to car design and testing due to this seminar. You will receive practical information and perspectives on in-shop and on-track car setup. Our "tips and tricks" focus on engineering and constitute a practical application of vehicle dynamics knowledge.



**I wish I had been able to attend Claude's seminar some years ago. It would have short cut the learning process of becoming a race engineer by many years. Claude adds his years of experience, and a few laughs, to make an entertaining and technically interesting few days. For a person wanting to make their way in the sport, this seminar is a must.**

**Campbell Little,**  
V8 Supercars Race Engineer

**One thought that I had after the course... when I was starting off, where was someone like Claude to explain things so clearly, rather than having to learn the hard way?**

**Owen Hayes,** Porsche Motorsport

**The concrete, rigorous and exhaustive content makes this educational opportunity invaluable for those in the vehicle dynamics and car business.**

**Pascal Vasselon,** Toyota F1  
Senior Chassis Technical Director

# people are talking