

In-House Seminar *fact sheet*

OptimumG has developed on-site courses for automotive companies, tire manufacturers and race teams alike. Whether your team needs a refresher on vehicle dynamics basics or a week to simply get each member on the same level of knowledge, OptimumG engineers can develop a program that fits your company's needs and goals. With an extensive library of vehicle dynamics subjects and exercises, courses can be anywhere between one day and one month, held in the classroom or on the track.

Contact us at engineering@optimumg.com or +1 303 752 1562 for your tailored program.

subjects covered

Tires The only elements of your race 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. Tire testing, analysis and how to use tire data in race car design and setup is also included.

Aerodynamics After a review of aerodynamics basics, the course delves into 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 tires. Differences between kinematic and force roll centers, as well as kinematic and force pitch centers will be explained.

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. Guided exercises on weight transfer calculations under combined lateral and longitudinal accelerations will be used.

Shocks, ride and transient weight transfers After a brief description of damper technology, the course 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 to diminish 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 racecar and race 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 racecar tire performance and endurance evaluation.

Car design, tuning modification and chassis setup Young and experienced racecar engineers alike have gotten new ideas, new engineering principles and new perspectives related to car design and testing due to this course. Receive practical information and perspectives on in-shop and on-track car setup.

integration and personalization

The seminar can be modified or adjusted, have sections added or removed, based on your organization's goals. Let us help plan your next company education program.