

Rail Dynamics Short Course

DAY 1 a.m.: Dynamics Terminology

- Definitions
- Mathematical Basics
- Derivation of Dynamic Equations for a Simple System

DAY 1 p.m.: Wheel-Rail Dynamics

- Rolling Body Dynamics
- Creep
- Wheel-rail Rolling Contact Theories and Models
- Traction Dynamics

DAY 2 a.m.: Track Dynamics

- Track Geometry Parameters
- FRA Track Standards
- Track Geometry Analytical Representation
- Relationship Between Track Parameters
- Isolated Track Geometry Variations

DAY 2 p.m.: Suspension Dynamics

- What Are Suspensions?
- What Do They Do?
- Primary Suspensions
- Secondary Suspensions
- Design Issues for Suspensions
- Primary Damper Tuning Effects

DAY 3 a.m.: Train Dynamics - Tangent Track

- Traction
- Lateral Stability
- Hunting Analysis
- Wheel-rail Wear

DAY 3 p.m.: Train Dynamics - Curved Track

- Dynamics of Curving
- Straight Trucks vs. Steerable Trucks
- L/V Force Analysis
- Wheel-Rail Wear

DAY 4 a.m.: Ride Analysis

- Introduction
- Ride Dynamics
- Ride Measurement Techniques
- Ride Modeling

DAY 4 p.m.: Introduction to NUCARS

- What is NUCARS?
- How does it work?
- What does it do?
- NUCARS File Structure
- Sample Model 1
- Sample Model 2