



15th LS-DYNA International Conference & Users Meeting

Post-Conference Training (2 day) Wed & Thurs, June 12th & 13th, 2018, 9am-5pm *Edward Hotel & Convention Center, Dearborn, MI*

NVH and Frequency Domain Analysis with LS-DYNA®

Instructor: Yun Huang, Ph.D.

Objective

The objective of the two day training course is to introduce the frequency domain vibration, fatigue and acoustic features of LS-DYNA to users, and give a detailed look at the application of these features in vehicle NVH simulation.

COURSE CONTENT

- Introduction
 - NVH Theory and lab testing technology
 - Overview of LS-DYNA frequency domain features and applications
 - Frequency domain analysis vs. Time domain analysis
 - Fourier transform
- FRF
 - Modal superposition method
 - Damping
 - Nodal force / Resultant force FRF
- SSD
 - Large mass method
 - ERP (Equivalent Radiated Power)
 - Mode expansion with LS-PrePost
 - Mode contribution fraction plot
- Random vibration with PSD loading
 - Correlated and uncorrelated multiple excitations
 - Acoustic waves
 - Pre-stress condition
- Acoustics
 - BEM, FEM
 - Vibro-acoustics
 - Incident waves
 - Acoustic panel / element contribution analysis
 - ATV and MATV
 - Frequency weighted SPL (dB)
- Radiated sound power, radiation efficiency
- Acoustic eigenvalue analysis
- Response spectrum analysis
 - Input earthquake spectrum
 - Modal combination methods (SRSS, CQC, etc.)
 - Multi input spectra
 - DDAM
- Fatigue
 - Fatigue analysis in harmonic / random vibration environment
 - Miner's rule
 - S-N curves
 - Dirlik Method
 - Mean stress correction
- Advanced topics
 - SEA (Statistical Energy Analysis)
 - Brake Squeal Analysis
 - NVH analysis based on IGA
- Auto NVH examples
 - FRF on BIW
 - Noise Transfer Functions (NTF)
 - Vehicle interior noise
 - Muffler Transmission Loss Analysis
- Workshop
 - Hands-on exercise
 - Post-processing of binary and ASCII databases (d3ssd, d3acs, d3ftg, nodout_ssd, elout_ssd, etc.)

For further information regarding pre- and post-conference training, please consult the conference website www.ls-dynaconferences.com or send email to ConfTraining@lstc.com.