ME7261 - Automotive NVH I

Integrated study of vibrations, acoustics, digital signal processing and machinery dynamics based on case study approach; examination of design, manufacturing, material, performance, and economic considerations.

This 4 credit-hour graduate course, the first in the NVH series, uses an innovative case study approach. Weekly lectures are supplemented with bi-weekly web conferences featuring discussions on key NVH issues. Course project on a contemporary topic is required. Selected NVH topics include:

- Acoustic, vibration and harshness design criteria (sound quality, source-path-receiver concepts and their applications to vehicle problems)
- Mathematical models and computer simulations (input-system-output paradigm, frequency response functions and system parameters)
- Experimental concepts and digital signal processing
- Vibration & noise path control elements (isolation, damping, balancing, resonators, absorption, barriers, enclosures)
- Vehicle noise and vibration sources (friction-induced problems, flow noise, etc.)
- Appropriate vehicle case studies: suspensions, engine mounts, shock absorbers, panel damping, interior acoustics, induction system, powertrain torsional systems & gear noise

Prerequisites: BS in Mechanical or Electrical Engineering; completion of the Mathematical Preparation for seminar or permission of Prof. Raj Singh to waive the prep seminar is required.

Ohio State University’s Automotive NVH certificate (CNVH) includes international collaboration with the Korean Advanced Institute of Science and Technology (KAIST).