



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Automotive Noise and Vibration Control I

MECHENG 7260

Credit Hours:

3.00 - 3.00

Course Levels:

Graduate

Course Components:

Lecture

Course Description:

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.

Prerequisites and Co-requisites:

Prereq: Sr or Grad standing in Engineering, or permission of instructor.

Course Goals / Objectives:

- Learn analytical, computational and experimental methods for analyzing automotive noise and vibration (NVH) problems, based on an integrated approach
 - Examine dynamic and acoustic issues involved in the design of contemporary vehicles
 - Apply concepts to real-life vehicle and machinery noise and vibration control problems
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Course Topics:

- Acoustic, vibration and harshness design criteria; sound quality; Source-path-receiver concepts and their applications to vehicle problems
 - Mathematical models and computer simulations based on input-system-output paradigm; Frequency response functions and system parameters; Experimental concepts; digital signal processing
 - Vibration & noise 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 and gear noise, etc.
 - Group discussion: Likely topics would include pass-by noise requirements; sound quality; engine noise and balancing; vehicle quality rating and experimental facilities
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Designation:

Elective