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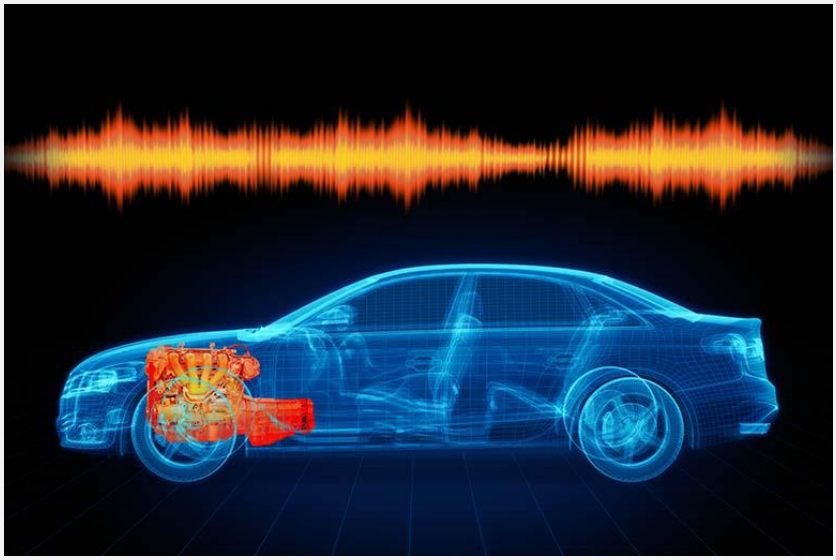
# SCHOOL OF MECHANICAL ENGINEERING

## Value Added Program on

# AUTOMOTIVE NVH



**Faculty coordinators**

**Dr. Lenin Babu M.C and Dr. S. Jeyanthi**

**Starting Date-14th AUGUST-2021**

**Registration Fees-Rs 2000/-**

**Registration Link-https://forms.gle/Bpv1eiuhUPsExGmn8**

**Contact details**

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|---|---|---|---|
| | | Course title: **AUTOMOTIVE NVH** | |
| School / Centre: | | **School of Mechanical Engineering** | |
| Beneficiaries: UG / PG/ Research | | **UG/PG/Research** | |
| Day | Topic | Theory/LAB/Experiment | Duration (hours) |
| 1 | Basics of vibration and modal analysis theory | **Theory** | **2** |
| 2 | Extraction of natural frequencies and mode shapes, harmonic analysis (Beam, plate and composite examples using ANSYS and MATLAB) | **LAB** | **3** |
| 3 | Introduction to acoustics, sound levels, sound fields, sound wave equations, Octave bands, Helmholtz equation, source path receiver models | **Theory** | **2** |
| 4 | Passive noise control – micro-perforated panels (MPP), resonators, passive sound absorbing foam materials | **Theory** | **2** |
| 5 | Car cabin analysis, Automobile cavity modes, Sound pressure analysis with and without wall absorption treatment, Helmholtz Resonator, MPP panels sound absorption and transmission loss analysis (MATLAB, ANSYS and COMSOL) | **Theory and LAB** | **4** |
| 6 | Active and Vibration and Noise Control | **ANSYS and MATLAB** | **2** |
| 7 | Duct acoustics, duct modes, Transfer matrix approach, and sound transmission loss analysis (STL) in muffler. | **Theory** | **2** |
| 8 | STL analysis in MATLAB and COMSOL | **LAB** | **3** |
| 9 | Vibration measurement techniques, instruments, Signal analysis, experimental modal analysis, demo on vibration measurements on physical automobile component (engine casing, oil sump) | Experiment | 3 |
| 10 | Acoustic measuring instruments and demo on acoustic measurements – Sound absorption, sound transmission loss using impedance tube | Experiment | 3 |
| 11 | Electric motor, Electromagnetic acoustic noise and vibration (e-NVH), structure born and air born noise, electric motor stator and rotor analysis | Theory and LAB | 4 |
| **SOFTWARE FOR ANALYSIS -ANSYS,COMSOL,MATLAB** | | | |