

CERTIFICATE PROGRAM

AUTOMOTIVE PRODUCT DESIGN FOR ACOUSTICS & NVH

PROGRAM OBJECTIVE

Define Technical specification, Feasibility study, Benchmark, VAVE, Vehicle Class A Surface Analysis for Part Design to meet NVH- Noise Vibration & Harshness and BSR - Buss, Squeak & Rattle requirements to meet the Vehicle OEM's Acoustics Criteria.

PREREQUISITE

Mechanical or Automotive Engineering Graduate

<2 Year Experienced Professional

Basic working knowledge on any CAD & FEA Software Tool.

FEA LAB SESSIONS

Recorded Lab Sessions are provided based on learning methodology of Ansys FEA tool to **analyse & support the acoustics measurement on a Product design.**

LEARNING OUTCOME

Understand how to interpret the OEMs Acoustics specs, Noise standard and Principles involve to design an Interior or Exterior Product considering Functional Specs, Selection of materials, mfg. feasibility, Law & Regulations

PROJECT LEARNING

During the Program, apart from classes, assignment are provided on how to design a product for acoustics using CAD & FEA tool and analyse the product design performance, to reduce noise sources, SPL & Sound Intensity.

PROGRAM MODULE

100% online and classroom interactive session
Collaborative Skill-set gain with CAD & FEA practices.

Courses are in-line to actual Automotive Tier-1 /OEM Work Methodology.

Recorded lecture are provided for reference.

TRAINER PROFILE

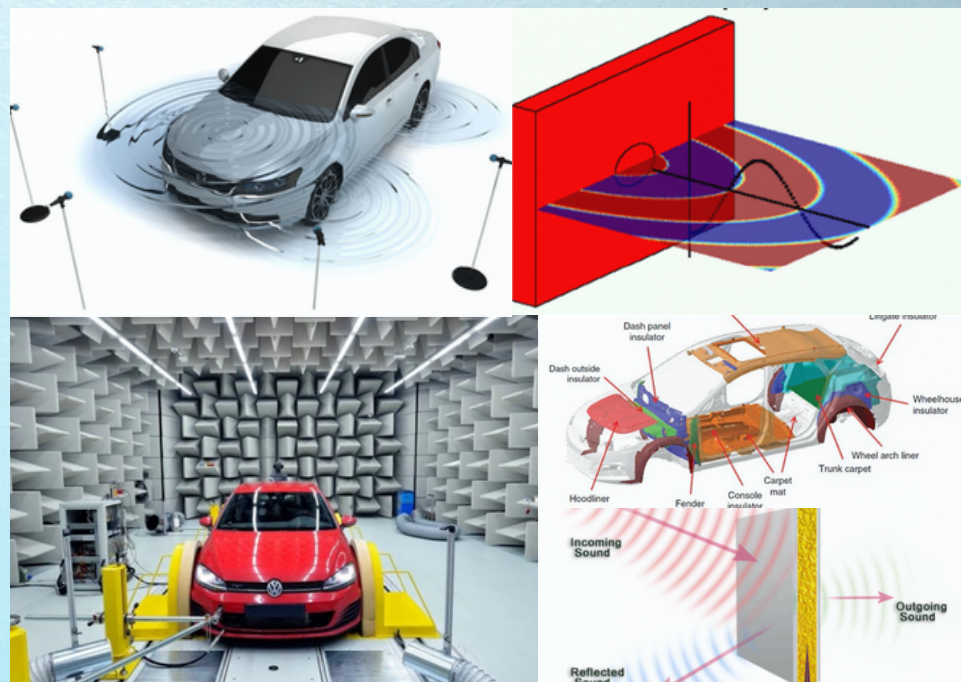
M.Tech Automotive Engineering - BITS Pilani WILP.

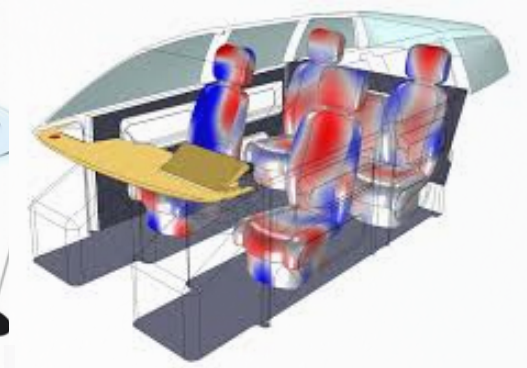
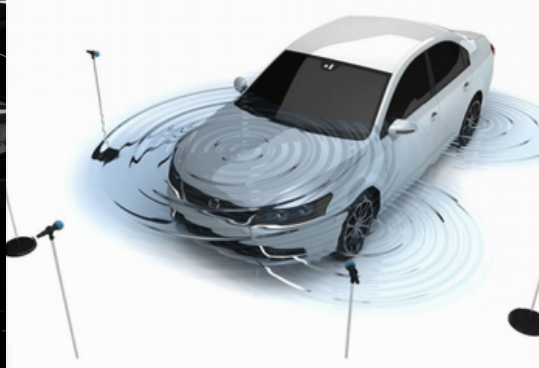
25 Years experienced professional in Automotive Industry & Technical Trainer.

Injection Tooling, CAD/CAM, Automotive Product Design, Engineering, Development and Validation.

CREDENTIAL

Recognition with **Certificate of Completion** will be facilitated at the end of the program. **Certificate of Internship Completion** are provided after successful completion of Internship Live Project.





INTRODUCTION TO AUTOMOTIVE DESIGN

MODULE-1

1 WEEK SESSION

CONTENT:

- Basics of Automotive Design
- Design Elements
- Concept Sketch
- Vehicle Manufacturing
- CAD & Class A Development
- Basics Design Thinking

AUTOMOTIVE NOISE & NVH SOURCE

MODULE-2

3 DAYS SESSION

CONTENT:

- Automotive NVH
- Noise Sources
- Aerodynamic Noise Impacts
- Noise Control Mechanisms
- Car Interior Noise Evaluation
- Automotive BSR

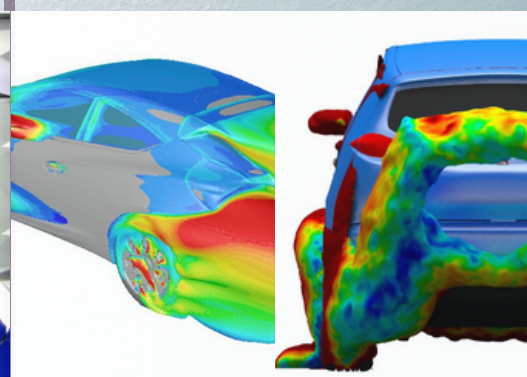
PRODUCT DESIGN FOR ACOUSTICS

MODULE-3

1 WEEK SESSION

CONTENT:

- Acoustics Sound Treatments
- Interior Insulator Packaging
- Master Sectioning & 3D Design
- Product Sound Quality
- Instrument Panel Case Study
- Front Bumper Case Study



SOUND ABSORBING MATERIAL

MODULE-4

2 DAYS SESSION

CONTENT:

- Sound Absorbing Materials
- Automotive Applications
- Material Classifications
- Material Verification Method
- Sound Absorption Validation
- Automotive Test Standards

ACOUSTICS TEST MEASUREMENT

MODULE-5

3 DAYS SESSION

CONTENT:

- Effects of Noise
- Noise & Vibration Sensors
- NVH Measurement Process
- Microphone Classification
- Sound Intensity Measurement
- Data Acquisition System

FEA ANALYSIS & REGULATIONS

MODULE-6

3 DAYS SESSION

CONTENT:

- FEA Lab Practise Session
- Acoustics Regulation
- Experimental Modal Analysis
- FEA for Design Optimization
- AVAS for Electric Vehicle

Duration: 4 Weeks / Daily 1.5 Hours Online & Classroom Interactive Training + Project / Internship

Project: Post completion of the course, an **Industrial oriented project** on **Body Trims Design** or **Structural Design** to improve **Acoustics Sound Quality** will be provided to gain Domain Expertise & Skill-set.