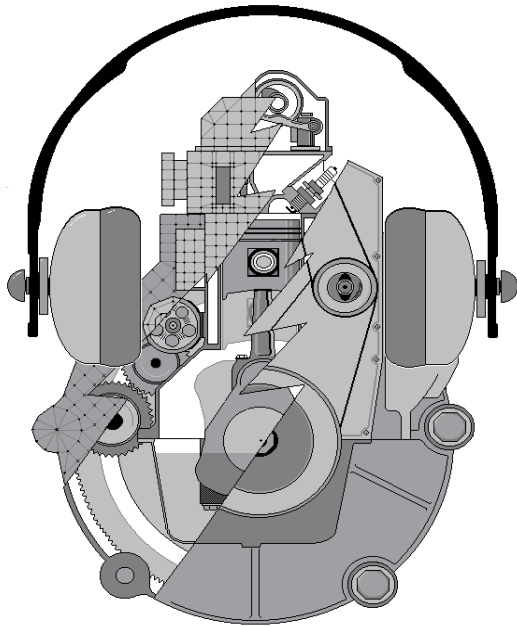


## A Short Course in Automotive Noise and Vibration

11<sup>th</sup> – 13<sup>th</sup> September 2017



**The Institute of Sound and  
Vibration Research**

### Institute of Sound and Vibration Research (ISVR)

The ISVR is an Institute within the world-class Faculty of Engineering and the Environment of the University of Southampton. Since its foundation in 1963, the ISVR has become widely acknowledged as one of the foremost international centres for the study of sound and vibration phenomena. The Institute comprises some 300 staff and students. Its achievement has been based upon success in the execution of three related roles:

#### Education

ISVR is unique in its ability to offer training in a comprehensive range of subjects related to sound and vibration. The instructional courses include BEng, MEng and MSc degrees in Acoustical Engineering. Individual postgraduate study courses lead to the degrees of MPhil and PhD. Numerous specialist short courses are held.

#### Research

ISVR is a centre for Postgraduate and Postdoctoral research. There are four research groups covering an extensive range of subjects: Acoustics, Dynamics, Human Sciences (including Audiology), Signal Processing and Control.

#### Consultation

ISVR is a centre for putting research into practice. ISVR Consulting provides expertise in all areas of sound and vibration including Automotive, Marine, Environmental and Industrial.

#### Overview of Course

The trend in recent years towards more socially acceptable vehicles has been accelerated by increasing legislative requirements. This, coupled with the major selling points of interior refinement and branding through acoustic signature, has meant that, for the manufacturers, understanding the fundamentals of automotive noise and vibration is more important than ever.

The course is primarily aimed at engineers in the areas of design, development, research and applications.

The three days provide an intensive presentation of fundamental principles of power unit and vehicle noise and vibration generation and control. Both the theory of design and practice of construction are discussed, and recent advances in research and development are considered. Tutorial workshops are provided to help those who are new to the subject, and open discussion is encouraged about current problems faced by the delegates.

#### Course Aims and Objectives

The course aims to review the origins, characteristics, analysis methods and control of noise and vibration of road vehicles and their prime movers.

On completing this course delegates will: -

- Comprehend the origins of internal and external noise and vibration in road vehicles.
- Comprehend the origins of noise and vibration in IC engines and electric prime movers.
- Understand the relative magnitude and characteristics of the complex sources of noise and vibration.
- Have a broad understanding of methods for the analysis, description and prediction of noise and vibration.
- Appreciate the wide range of noise and vibration control methods that are available.

#### Course Fees

The course is non-residential although accommodation can be arranged if required. The fee for the course is £1,125 which includes lecture notes, refreshments during the day and a special course function.

Please note there will be no refund of fees for cancellations received at ISVR less than two weeks before the start of a course. For cancellations received between four weeks and two weeks prior to the start of a course, 50% of the fee will be refunded. Cancellations made by telephone will be accepted if confirmed immediately in writing. Substitutions, however, may be made at anytime.

We reserve the right to cancel or postpone the course if insufficient registrations are received. In this case all fees will be refunded.

## Course Timetable

### Monday 11 September 2017

- 8.30 Welcome and Introduction to ISVR
- 9.00 Introduction to Noise and Vibration Units
- 9.30 Noise and Vibration Measurements
- 10.15 Characteristics of Automotive Noise
- 11.15 Low Frequency Power Unit Forcing
- 1.30 High Frequency Power Unit Forcing
- 2.45 Tyre and Road Noise
- 3.45 Inlet and Exhaust Noise

### Tuesday 12 September 2017

- 8.30 Tutorial Workshop
- 9.00 Wind Noise
- 10.15 Applied Signal Processing
- 11.15 Vibration Testing – Modal Analysis
- 1.30 Sound Quality
- 2.45 Source Identification and TPA
- 3.45 Body Acoustics and Interior Trim

### Wednesday 13 September 2017

- 8.30 Tutorial Workshop
- 9.00 Hybrid and Electric Vehicle Noise
- 10.15 Vehicle NVH Strategy
- 11.15 Active Control
- 1.30 Anti-Vibration Mounting for Control of Vibration and Noise
- 2.45 Ride Comfort
- 3.45 Exterior Noise and Pass-by

## Course Lecturers

Dr Jordan Cheer	Research Fellow	ISVR
Mr John Dixon	Principal Consultant	ISVR Consulting
Dr Christos Karatsovis	Senior Consultant	ISVR Consulting
Dr Delphine Nourzad	Senior Consultant	ISVR Consulting
Mr Nick Pattie	Past Head of P/T NVH of	Ford Europe
Dr Yi Qiu	Associate Professor	ISVR
Mr Dave Rhodes	Software Consultant	ADAU
Mr Simon Roberts	Principal Consultant	ISVR Consulting
Dr Malcolm Smith	Principal Consultant	ISVR Consulting
Mr Dave Thurgood	Engineering Manager	Pritex
Dr Tim Waters	Associate Professor	ISVR

## Course Accommodation

We encourage all participants to stay at the Premier Travel Inn <http://www.premierinn.com/gb/en/hotels/england/hampshire/southampton/southampton-airport.html>  
Tel: +44 (0)870 990 6436. Located a short journey from the University, next to Southampton Airport, the M27 and Southampton Parkway Railway Station. Transport between only the Premier Travel Inn and the University will be provided. Please contact Diane Farrenden for more details.

## Enrolment Form

Please provide the following details:

### Areas of interest

(please tick your choice/s)

- |              |                |                          |               |                          |
|--------------|----------------|--------------------------|---------------|--------------------------|
| Emphasis: -  | Theoretical    | <input type="checkbox"/> | Practical     | <input type="checkbox"/> |
| Engines: -   | Combustion     | <input type="checkbox"/> | Alternative   | <input type="checkbox"/> |
| Noise: -     | Interior       | <input type="checkbox"/> | Exterior      | <input type="checkbox"/> |
| Vibration: - | High Frequency | <input type="checkbox"/> | Low Frequency | <input type="checkbox"/> |

Name: \_\_\_\_\_

Status: \_\_\_\_\_ Experience in NVH \_\_\_\_\_ yrs

Company: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Tel: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Company VAT No. \_\_\_\_\_

**and enclose a cheque for £1,125 made payable to 'University of Southampton'  
or please invoice at**

Signed \_\_\_\_\_

Please return by 29 August at latest to:

Mrs Diane Farrenden

ISVR Consulting,

Building 15,

University of Southampton

Highfield, Southampton, S017 1BJ

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