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Institute of Sound  
and Vibration Research

UNIVERSITY OF  
**Southampton**

Noise control  
and aeroacoustics.  
*Advanced courses*



# Advanced courses

## Course features

- Flexibility: there are two distinct streams but we offer the flexibility to mix lectures, according to your interests.
- Word-class lecturers: the course presents a unique opportunity to learn from and talk to lecturers at the very forefront of their fields. Delegates are encouraged to discuss their problems in and out of class.
- A renowned institution: the ISVR has over 50 years' experience delivering high-quality education to engineering students and professionals, and is at the forefront of research in many areas of sound and vibration.
- Facilities: you will have the opportunity to tour our extensive facilities, including one of the largest anechoic chambers in the country.
- Course dinner: a dinner towards the end of the course provides the opportunity to meet with other delegates and members of staff.

## Location

The course will be held in Building 13 on the University of Southampton's main Highfield Campus, just 10 minutes' walk from University accommodation.

## Fees

Our residential option includes accommodation in a university hall of residence, with breakfast and dinner, Sunday-Thursday inclusive (full five-day course) or Tuesday-Thursday inclusive (three-day Advanced Course only).

Both fees include course literature for your chosen stream and a course dinner on Thursday evening.

	Refresher course <b>plus</b> advanced course	Advanced course only
Non-residential	£1300	£1100
Residential	£1500	£1300

There is a discount of £100 for applications received before 1 July 2015.

## Aeroacoustics

The Advanced Course in Aeroacoustics provides an introduction to the phenomena involved in the prediction and control of flow generated by noise, with an emphasis on the physics and modelling that underpin predictive acoustic analysis.

This course is suitable for anyone working in areas where flow noise is a major issue. The course would benefit both consultants and researchers in aeroacoustics with any level of experience. A degree-level qualification in a physical science or engineering is desirable, though not absolutely necessary.

## Noise Control

The Advanced Course in Noise Control outlines the underlying principles of noise control, examines the character of noise in some key applications and discusses how noise may be reduced by design or palliative treatment. The Advanced Course in Noise Control is divided into three sections: Basic Principles, Techniques and Applications, and Case Histories.

This course is suitable for anyone working in noise control consultancy or research. The course would benefit both those with extensive experience in noise control who wish to further their understanding of its principles, or those new to the field. A degree-level qualification, or equivalent, in a physical science or engineering is desirable, though not absolutely necessary.

## Course dates

7-11 September 2015

## Book online at

<http://store.southampton.ac.uk>  
click on 'Conferences & Events'  
click on 'Engineering and the Environment'  
click on 'ISVR'

closing date: 28 August 2015



# Aeroacoustics

## Monday 7 September (Refresher Day 1)

08.30–09.00	Registration	
09.00–09.15	Introduction	
09.15–10.15	Fundamentals of sound propagation	V F Humphrey
10.30–11.30	Basic concepts in vibration	N S Ferguson
11.45–12.45	Fundamentals of Signal Processing, Signals and Systems, Fourier methods 1	J K Hammond
12.45–13.45	Lunch	
13.45–14.45	Three-dimensional sound fields	P F Joseph
15.00–16.00	Free and forced vibration	N S Ferguson
16.15–17.15	Fundamentals of Signal Processing, Signals and Systems, Fourier methods 2	J K Hammond
17.30	Drinks reception	

## Tuesday 8 September (Refresher Day 2)

09.00–10.00	Human response to vibration	M J Griffin
10.15–11.15	Human response to sound	I H Flindell
11.30–12.30	Random processes, Correlation functions and Spectra, System Identification	J K Hammond
12.30–13.30	Lunch	
13.30–14.30	Acoustic source models	P F Joseph
14.45–15.45	Classical vibration control	M J Brennan
16.00–17.00	Structural Wave Motion	N S Ferguson

## Wednesday 9 September (Advanced Day 1)

09.00–10.00	Introduction to aeroacoustics	G Gabard
10.15–11.15	Propagation effects 1	G Gabard
11.30–12.30	Propagation effects 2	G Gabard
12.30–13.30	Lunch	
13.30–14.30	Duct acoustics – fundamentals	P F Joseph
14.45–15.45	Duct acoustics – absorption and scattering	A McAlpine
16.00–17.00	Aeroacoustic measurements	K R Holland
17.15–18.15	Tour of ISVR	

## Thursday 10 September (Advanced Day 2)

09.00–10.00	Simple Sources of Noise	G Gabard
10.15–11.15	Duct Liner Design and Performance	P Murray
11.30–12.30	Jet Noise 1	R H Self
12.30–13.30	Lunch	
13.30–14.30	Jet Noise 2	R H Self
14.45–15.45	Turbomachinery noise: Tones	A McAlpine
16.00–17.00	Turbomachinery noise: Broadband	P F Joseph
19.30	Off-site course dinner	

## Friday 11 September (Advanced Day 3)

09.00–10.00	Automotive aeroacoustics	P F Joseph
10.15–11.15	Reactive Duct Silencer Design	M J Brennan
11.30–12.30	Airframe noise and installation Effects	M G Smith
12.30–13.30	Lunch	
13.30–14.30	Computational aeroacoustics – propagation	G Gabard
14.45–15.45	Computational aeroacoustics – sources	J W Kim

# Noise Control

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13.30–14.30	Acoustic source models	P F Joseph
14.45–15.45	Classical Vibration Control	M J Brennan
16.00–17.00	Structural wave motion	N S Ferguson

## Wednesday 9 September (Advanced Day 1)

### Basic principles

09.00–10.00	Principles of noise control 1	P F Joseph
10.15–11.15	Principles of noise control 2	P F Joseph
11.30–12.30	Basic acoustic measurements	K R Holland
12.30–13.30	Lunch	
13.30–14.30	Vibration Control for Reduced Noise	M J Brennan
14.45–15.45	Numerical methods in acoustics	G Gabard
16.00–17.00	Vibroacoustics	N S Ferguson
17.15–18.15	Tour of ISVR	

## Thursday 10 September (Advanced Day 2)

### Techniques

09.00–10.00	Identifying and ranking origins and radiators of noise	M G Smith
10.15–11.15	Beamforming and inverse methods	K R Holland
11.30–12.30	Sound intensity and sound power measurement	P F Joseph
12.30–13.30	Lunch	
13.30–14.30	Active control of sound	S J Elliott

### Applications and case histories

14.45–15.45	Case studies in noise control	A J Varley
16.00–17.00	Control of road vehicle noise	S Roberts
19.30	Off-site course dinner	

## Friday 11 September (Advanced Day 3)

09.00–10.00	Sound absorbent duct design	M G Smith
10.15–11.15	Reactive Duct Silencer Design	M J Brennan
11.30–12.30	Plant noise propagation and propagation in factories	S Dance
12.30–13.30	Lunch	
13.30–14.30	Active control of structurally radiated sound	M J Brennan
14.45–15.45	Workshop	P F Joseph & M J Brennan

Since its foundation in 1963, ISVR has become widely acknowledged as one of the world's foremost centres for the study of sound and vibration phenomena. Its achievements have been based upon success in the execution of three key areas:

## Education

ISVR is unique in its ability to offer degree programmes and continuing professional development in a comprehensive range of subjects related to sound and vibration. Short courses are offered to industry on a regular basis, with tailor-made options available on request.

## Research

ISVR is a centre for postgraduate and postdoctoral research. ISVR has a number of research groups covering an extensive range of subjects: acoustics, structural dynamics, human sciences, audiology, fluid dynamics, vehicle dynamics, signal processing, active noise and vibration control and instrumentation.

## Consultation

ISVR is a centre for putting research into practice. ISVR Consulting provides expertise in a wide range of topics, including environmental and industrial noise and vibration, hearing and vibration-induced injuries assessment and conservation, design, and vehicle and engine design and refinement (NVH). The unit operates a range of facilities including large anechoic and reverberation chambers, engine test cells, a progressive wave tube and a blast wave generator. The unit can also call upon the expertise of ISVR academic staff for specialist applications.

# Contact

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