Professional Short Course (8 Hours)

Text Book: The Aeroacoustics of Low Mach Number Flows *by Stewart Glegg and William Devenport, 1st Edition*

Turbulence and Sound (Two Hours)

1.1 Aeroacoustics of Low Mach Number Flows
1.2 Sound Waves and Turbulence
1.3 Quantifying Sound Levels and Annoyance
3.1 The Acoustic Wave Equation
3.2 Plane waves and Spherical waves
3.3 Harmonic Time Dependence
3.4 Sound Generation by a Small Sphere
3.6 Superposition and Far Field Approximations
3.7 Monopole, Dipole and Quadrupole Sources
3.8 Acoustic Intensity and Sound Power Output
3.9 Solution to the Wave Equation Using Green's Functions
3.10 Frequency Domain Solutions and Fourier Transforms

Lighthill's Acoustic Analogy (Two Hours)

4.1 Lighthill's Analogy
4.3 Curle's theorem
4.4 Monopole, Dipole and Quadrupole Sources
4.5 Tailored Green's Functions
5.2 The Ffowcs Williams and Hawkings Equation
5.3 Moving Sources
5.5 Ffowcs Williams and Hawkings Surfaces

Turbulence (One Hour)

8.1 The Nature of Turbulence
8.2 Averaging and the Expected Value
9.1 Homogeneous Isotropic Turbulence
9.2 Inhomogeneous Turbulent Flows

Leading and Trailing Edge Noise (One Hour)

14.1 The Compressible Flow Blade Response Function
14.2 The Acoustic Far Field
14.3 An Airfoil in a Turbulent Stream
15.1 The Origin and Scaling of Trailing Edge Noise
15.2 Amiet's Trailing Edge Noise Theory

Measurements (One Hour)

10.4 The Measurement of Turbulent Pressure Fluctuations
10.5 Velocity Measurement
10.1 Aeroacoustic Wind Tunnels
10.2 Wind Tunnel Acoustic Corrections
10.3 Sound Measurement

Phased Arrays (One Hour)

12.1 Basic Delay and Sum Processing
12.2 General approach to array processing

12.3 Deconvolution Methods
12.4 Correlated Sources and Directionality