PhD Level Course in Advanced Aeroacoustics

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

The second year graduate course in aeroacoustics is a pre-requisite

The Linearized Euler Equations
- 6.1 Goldstein's Equation
- 6.2 Drift Coordinates
- 6.3 Rapid Distortion Theory
- 6.4 Acoustically Compact Thin Airfoils and the Kutta Condition
- 6.5 The Prantl-Glauert Transformation

Vortex Sound
- 7.1 Theory of Vortex Sound
- 7.2 Sound from Two Line Vortices in Free Space
- 7.3 Surface Forces in Incompressible Flow
- 7.4 Aeolian Tones
- 7.5 Blade Vortex Interactions in Incompressible Flow
- 7.6 The Effect of Angle of Attack and Blade Thickness on Unsteady Loads

The Theory of Edge Scattering
- 13.1 The Importance of Edge Scattering
- 13.2 The Schwartzschild Problem and its Solution Based on the Weiner Hopf Method
- 13.3 The Effect of Uniform Flow
- 13.4 The Leading Edge Scattering Problem

Leading Edge Noise (Review)
- 14.1 The Compressible Flow Blade Response Function
- 14.2 The Acoustic Far Field
- 14.3 An Airfoil in a Turbulent Stream
- 14.4 Blade Vortex Interactions in Compressible Flow

Open Rotor Noise
- 16.1 Tone Noise and Broadband Noise
- 16.2 Time Domain Prediction Methods for Tone Noise
- 16.3 Frequency Domain Prediction Methods for Tone Noise
- 16.4 Broadband Noise from Rotors
- 16.5 Haystacking of Broadband Noise
- 16.6 Blade Vortex Interactions

Duct Acoustics
- 17.1 Introduction
- 17.2. Sound Waves in Cylindrical Ducts
- 17.3 Duct Liners
- 17.4 The Greens Function for a Cylindrical Duct with Flow
- 17.5 Sound Power in Ducts
- 17.6 Non Uniform Mean Flow
- 17.7 The Radiation from Duct Inlets and Exits

Fan Noise