Spring Semester 2022

ME 5734: ADVANCED ENGINEERING ACOUSTICS

Course Leader: Prof. Chris R. Fuller, cfuller@vt.edu

Meeting time: Tuesday/Thursday, 3:30-4:45pm, room at NIA to be determined.

On Line Instruction: - CRN 20496

1. Catalog Description

The fundamental principles underlying the generation, transmission and reception of acoustic waves and vibrations will be presented. Advanced methods for analytically investigating various acoustical situations will be developed. The application of these methods to typical engineering acoustical problems with physical interpretation of the mechanisms will be studied.

2. Educational Objectives

Acoustics and vibrations are a part of many engineering problems and thus this course will provide material useful for many disciplines. The course objective is to build upon the students' basic knowledge of acoustics and vibrations. Rather than rely upon the "formulae" type approach, the course will teach the student to combine analytical techniques with a good physical insight in order to study more difficult and unusual acoustical problems such as encountered in acoustical consulting or research. This course will also introduce the student to research techniques necessary to perform investigations in acoustics of a more fundamental nature.

3. Prerequisite

The course listing states that ME 4724 is a pre-requisite. However if the student has some experience in vibrations, wave theory or basic differential equations then course taking approval will be given. Please contact cfuller@vt.edu if more information is needed.

4. Textbook

Kinsler, L. E., A. R. Frey, A. B. Coppens and J. V. Sanders, Fundamentals of Acoustics, 4th Edition, New York, John Wiley, 2000.

Reference: (1) Fahy, F., Sound and Structural Vibration, Academic Press, London, 1985. Paperback available.

(2) Junger, M. C. and D. Feit, Sound, Structure and Their Interaction, 2nd Edition, MIT Press, Cambridge, MA, 1986. (also published by the Acoustical Society of America)