

Course: IHS 527 – Noise Measurement and Control

Semester: Spring 2011

Number of credit hours: 3

Description: IHS 527. Noise Measurement and Control. 3 Hr. PR Senior or graduate student. Includes the study of noise physics, effects of noise on hearing and well-being, noise exposure regulations, and engineering of noise controls. Practical experience with noise dosimeters, sound level meters, and instrumentation used to assess human noise exposure is provided by classroom demonstration and by a field trip.

Prerequisite: Senior or graduate student

Textbook: Purchase at Amazon or directly both books together as a set from the American Industrial Hygiene Association (join as student member first to receive discount).

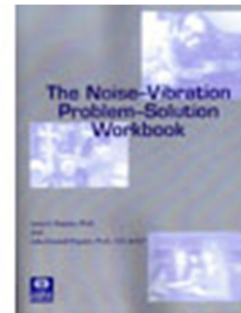
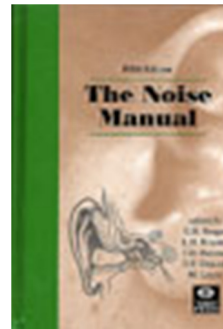
www.AIHA.org

**The Noise Manual, Fifth Edition
And The Noise-Vibration Problem-Solution
Workbook**

Edited by Elliott H. Berger, Larry H. Royster, Julia D. Royster, Dennis P. Driscoll, and Marty Layne

Additional materials on my website:

www.IndustrialVentilation.net



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Office Hours	See posting next to my door

Course Goals/Learning Objectives: Students will be able to:

1. Compute values related to the fundamentals of the physics of noise, including effects of distance, multiple sources, etc. on noise levels.
2. Understand OSHA and NIOSH regulatory standards
3. Describe hearing conservation programs, including audiometric testing and hearing protection.
4. Do noise measurement and noise surveys.
5. Compute values needed for engineering controls of noise and vibration.

IH Educational Outcomes: This course helps achieve the Educational Outcomes for the MS Industrial Hygiene Program in the following areas:

1. an ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice, such as: Principles and methods of control of physical and chemical hazards. (IMSE 564, 660 and IH&S 627, 628)
2. the ability to apply knowledge of math, science, and Industrial Hygiene. (Project, IH&S 628)
3. the ability to work individually, on teams, and/or on multi-disciplinary teams to identify, formulate and solve problems using Industrial Hygiene, safety, and ergonomics knowledge, skills and tools. (Project, 628)
4. an ability to formulate or design a system, process or program to meet desired needs. (IMSE 564, 660 and IH&S 627, 628)
5. The latter 3 are evaluated in the noise project

Performance Metrics:

1. Faculty assessment of home works, projects, and exams.
2. Student self-assessment.

Grading Elements, Weighting and Scale:

Grade Element	Weighting	Grade Scale
Midterm	32%	A =>90
Final	32%	B =>80
Quizzes and Homework	16%	C=>70
		D=>60
Projects	20%	F<60

Cheating and mutual assistance: Cheating on exams will produce severe consequences. For laboratory reports, each student is expected to write their own reports with no assistance in organizing or writing the report from anyone other than the instructor. Students may be organized into groups to execute the labs or projects and to collect data. Students may share such data and discuss how it should be used in a report, but may not plagiarize each others tabular or written presentation in the reports. Likewise, students may discuss how the data should be analyzed, but may not use the analyses done by another or provide their own analyses to another student.

Statement on Attendance:

Student attendance is expected unless excused by the instructor. The basis for an excused absence will follow University and IMSE policy. Class attendance will not be taken each week, but class participation is expected.

Statement on Social Justice:

West Virginia University is committed to social justice. I concur with that commitment. I expect to foster a nurturing learning environment that is based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, you must make appropriate arrangements through Disability Services (293-6700). They will identify the nature of the accommodation your disability requires.

Statement on Disability Accommodation

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, you must make appropriate arrangements through Disability Services (293-6700). They will identify the nature of the accommodation your disability requires and inform me of appropriate accommodations.

Approximate Course Topic Outline

Lecture	Course Topic	Emphasis in Reading. Chapter:
1	Noise Control and Hearing Conservation: Why Do It?	1
1-3	Physics of Sound and Vibration	2
4-6	Sound Measurement: Instrumentation and Noise Descriptors, including demonstrations and lab	
7-8	Standards and Regulations for Dose Assessment, including dose calculations OSHA NIOSH, ACGIH	16
9-10	Noise surveys and data analyses, including lab	7
11-15	Noise control engineering	9
16	Midterm	
17-18	Anatomy and Physiology of the Ear: Normal and Damaged Hearing	4
19-20	Hearing Protection Devices	10
21	Non-auditory Effects of Noise (time permitting)	5
22-23	Elements of a hearing conservation program Standards for programs: Program overview and administration Education and motivation Hearing protection devices Audiometric monitoring Evaluating program effectiveness	6, 8, 11, 12
24-25	Project Presentations Note: students will visit noise measurement site at least twice with the first visits used to gather planning information.	
26	Workers' compensation (time permitting)	18
27	Final exam	

Prepared By: Steven E. Guffey, PhD, CIH
Date: 1 January 2011