Acoustics Master Class Curriculum

Introduction (VIDEO)

The Scientific Method (Lesson 1)

Funding limitations

Authority

Dogmatism

Human error

Illogical reasoning

Mystification

Time constraints

Ego

The States of Matter (Lesson 2)

Solids

Liquids

Gases

Plasma

The basic attributes of the universe (Lesson 3)

Mass (described)

Energy (described)

[Space-time, Electromagnetism, Gravity, etc., are dependent upon these basic attributes]

The Ties that Bind (Lesson 4)

Gravity

Electromagnetic

Strong Nuclear

Weak Nuclear

Unknown (Dark)

Energy total = Kinetic + Potential Energy

BASIC THEORY – PHYSICS FUNDAMENTALS (Lesson 5)

The law of conservation of Energy

Snell's Law

The Physical Parameters of Sound (Lesson 6)

Sound and Vibration

Sound intensity

Wavelength

Velocity of Sound

Inverse-Square Law (Lesson 7)

Noise Reduction with Distance

Sound Absorption-

Frictional (*Sound Absorption* Lesson 8.0, 8.1)

Detailed explanation

Diffractive (*Sound Absorption* Lesson 9)

Detailed explanation

Diaphragmatic (*Sound Absorption* Lesson 10)

Detailed explanation

Resonance (*Sound Absorption* Lesson 11)

Detailed explanation

Sound-absorbing treatment (Lesson 12)

Examples and uses

[BONUS – ALL OF MY LABORATORY TESTS WHICH COST ME $30,000 USD]

Sound absorption coefficient (α) (Lesson 14)

What is the absorption coefficient?

(Use Ron's presentation)

Reverberation Time (RT) (Lesson 14)

Detailed description and examples

What protocol is most useful?

References

Standards (ASTM C423) "Standard Test Method for Sound Absorption and Sound Absorption (Lesson 15)

References and explanations

Reverberation rooms (Lesson 16)

Purpose and use

Laboratory test mountings for Absorption testing applied to C423 from ASTM E795-2012

(Lesson 17)

References and explanations

Building Isolation - (sound-proofing)

Fundamentals of sound isolation (Lesson 18)

Basics

How to determine what is required for the situation. (All situations are different)

Lab testing and field testing (Lesson 19)

ASTM C90

ASTM E336

Examples, details, and explanation

Single wall construction (Lesson 20)

Laboratory testing

Examples, and details

Double wall construction (Lesson 21)

Laboratory testing

Examples, and details

Floating floors (Lesson 22)

Laboratory testing

Examples, and details

ROOM ACOUSTICS

Large room acoustics

Wavelength and frequency (Lesson 23)

Examples of wave propagation and ray tracing

Problems and solutions

Room Shapes (Lesson 24)

What difference does shape make?

Problems and solutions

Room Ratios (Lesson 25)

When does it count?

Problems and solutions

Reflection (Lesson 26)

Problems and solutions

Echoes and flutter echo (Lesson 27)

Causes and remedies

Problems and solutions

Diffraction (Lesson 28)

How does diffraction improve acoustics?

Problems and solutions

Diffusion (Lesson 29)

How adding diffusion can create better spaces and what to avoid.

Problems and solutions

Small room acoustics

Wavelength and frequency (Lesson 30)

Examples of wave propagation and ray tracing

Problems and solutions

Room Shapes (Lesson 31)

What difference does shape make?

Problems and solutions

Room Ratios (Lesson 32)

When does it count?

Problems and solutions

Reflection (Lesson 33)

When is it needed and when it's not.

Problems and solutions

Echoes and flutter echo (Lesson 34)

Causes and remedies

Problems and solutions

Diffraction (Lesson 35)

How does diffraction improve acoustics?

Problems and solutions

Diffusion (Lesson 36)

Is it needed or does it create more problems?

Recording Booths (Lesson 37)

Who, What, When, Where, and How.

Problems and solutions

Room Treatment

Absorption Coefficients (Lesson 38)

How they relate to small room acoustics

Problems and solutions

Broadband Absorption (Lesson 39)

How, Why, and what does it do in small rooms?

Problems and solutions

Diaphragmatic Absorbers (Lesson 40)

Function, tuning, and when are they required in small room acoustics

Problems and solutions

Diffraction and Reflection (Lesson 41)

How Diffraction and Reflection help?

Where to use?

When NOT to use.

Problems and solutions

Diffusion (Lesson 42)

Is Diffusion required?

Where to use?

When NOT to use.

Problems and solutions

The course will continue as long as we are available to produce more lessons – mostly based on YOUR feedback.

Glossary

References

Join the course! - https://www.skool.com/architectural-acoustics-6510/about