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# Welcome to Creative Sound Hawaii's Instructional Website.



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## Participation Consent

### University of Hawai'i

#### **Consent to Participate in Research Project:**

#### *Designing and Evaluating a Professional Sound Reinforcement System for Adults*

My name is Ken Miyamoto. I am a Graduate Student at the University of Hawai'i at Manoa (UHM), in the Department of Learning Design and Technology. As one of my interests, I design professional sound reinforcement systems. The purpose of this instructional design project is to develop and evaluate an instructional module to improve basic knowledge of signal path and how to create an audio sound system for adult clients at Creative Sound and Lighting. The purpose of the research is to improve the module for future use.

**Project Description - Activities and Time Commitment:** If you choose to participate, I will meet with you face-to-face to take part in using the website to test the module in our store. The training will last for about 45 to 60 minutes. This research will use the website to collect data from your responses to pre, embedded, and post questions to surveys and test included inside the module about demographics and prior knowledge. If you participate, I will ask questions of you during the module. You will be one of a total approximately of fifteen participants who will use this module in our storefront. You will be asked to complete a pre-survey and a post survey that should take no more than 10 minutes each. If you would like to preview a copy of all of the questions that I will ask you, please let me know

**Benefits and Risks:** You may benefit from participating in my research project by learning more about setting up sound systems and audio theories. The results of this project might help me and other researchers learn more about creating web-based modules to help people learn. I believe there is little or no risk to you in participating in this

project. There is a possibility you may become uncomfortable or stressed by answering a question or navigating the module. If that happens, you may skip the question, take a break, or stop the project. You may also withdraw from the project altogether at any time with no penalty to you.

**Confidentiality and Privacy:** During this research project, I will keep all data collected in a secure location. Only I will have access to the data, although legally authorized agencies, including the University of Hawai'i Human Studies Program, have the right to review research records. All responses will be kept confidential. After the training session, I will use pseudonyms to protect the confidentiality of any information linked to my participants. When I report the results of my research project, and in my typed notes from my interview with you in the store, I will not use your name or any other personally identifying information. If you would like a summary of the findings from my final report, please contact me at the number listed near the end of this consent form.


**Voluntary Participation:** Participation in this research project is voluntary. You are free to choose to participate or not to participate in this project. At any point during this project, you can withdraw your permission without any loss of benefits.

**Questions:** If you have any questions about this project, please contact me at via phone (808) 478-4105 or e-mail (kenmiyam@hawaii.edu).

If you have any questions about your rights in this project, you can contact the University of Hawaii, Human Studies Program, by phone at (808) 956-5007 or by e-mail at [uhirb@hawaii.edu](mailto:uhirb@hawaii.edu).

**To Access the Survey:** Please go to the following web page: <http://creativesoundssystemdesign.weebly.com>. You should find a link to the survey and instructions for completing it. Completing the survey will be considered as your consent to participate in this study.

Please print a copy of this page for your reference.

 consentformv4.pdf  
[Download File](#)

**By clicking Begin, you agree to the terms in the consent form above.**

**BEGIN**

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## Demographic Survey

### 1. What is your Gender?

 Male Female Prefer not to say

### 2. What is your age group?

 18-30 31-40 41-50 51-Up

### 3. What city/town do you live in?

### 4. Are you an audio enthusiast?

 Yes No

### 5. How long have you been working with audio equipment?

 0-5 yrs. 6-10 yrs. 11-15 yrs 16-20 yrs. 21+yrs.

### 6. Do you own your own Professional Sound System?

 Yes No

**7. How often do you use your sound system in a week?**

- None
- Once
- Twice
- Three
- Four or More

**8. Do you have any prior knowledge of what a Hertz is?**

- Yes
- No

**9. Do you have any prior knowledge of what Pitch is?**

- Yes
- No

**10. Do you have any prior knowledge about what Sound Pressure Level or (SPL) is?**

- Yes
- No

**11. Do you know what an audio mixer is?**

- Yes
- No

**12. Have you received professional audio training before?**

- Yes
- No

**SUBMIT**

Please click on "Submit" before continuing. Thank you.

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## Pre-Test

Please answer the questions to the best of your ability it is okay to make an educated guess.

1. Which one of the following is the best example of sound?

- A power amplifier.
- Vibrations in the air.
- A three way crossover.
- A graphic equalizer.

3. Which of the following is a Hertz?

- Cycles per second.
- Cycles per minute.
- Cycles per hour.
- Cycles per day.

2. An example of Pitch is the (Please complete the sentence)

- movement of air on a long wavelength.
- percussion instruments used to play a rhythm.
- cord that attaches to the guitar to play in a band.
- speed of the vibration and the time it takes to complete a cycle.

4. What is a Decibel?

- A measure of tone and melody.
- A ratio between power and intensity.
- The speed at which sound travels.
- A bell shaped sound wave.

**5. What is Sound Pressure Level or SPL?**

- A ratio of hearing and intensity.
- A test tone used to analyze a room.
- The vibrations used to move power.
- The output equal to the input.

**7. What is a graphic equalizer?**

- A device that separates audio signals between high and low.
- A signal processor that separates individual frequencies.
- A device that amplifies sound.
- A signal processor that switches between audio and video.

**9. What is an amplifier?**

- A device that increases sound strength.
- A music storage device.
- A digital device that makes frequencies.
- A calculator that increases sound.

**6. An example of an audio mixer is (Please complete the sentence)**

- a blender that hold audio materials.
- a device that separates audio signals between high and low.
- a console that has multiple inputs and outputs.
- a device that hold multiple songs on a disk.

**8. What is a crossover?**

- A device that modifies the signal strength.
- A signal processor that adds distortion to the sound.
- A signal processor that separates audio signals between high and low.
- A device that auto corrects pitch and time.

**10. What is a loudspeaker?**

- A crate that is made out of wood.
- A box that holds music materials.
- A cabinet that reproduces sound.
- A polymer box that splits sound up.

**SUBMIT**

Please click on "Submit" before continuing. Thank you.

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## Lessons of Audio Instructions

### Instructions [Please click on video to Play.](#)

The lessons here are split into three sections.

Lesson 1 will take you through some of the most common audio theories and concepts.

Lesson 2 will go through the equipment and organizational signal chain of an audio system.

Lesson 3 will provide instructional videos for various sound system components and setup.

[CONTINUE TO LESSON 1](#)



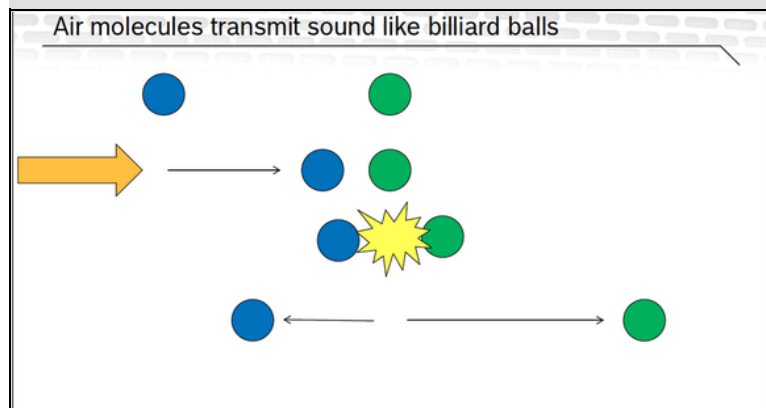
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# Lesson 1: Audio Theories

## Audio 101

### What is Sound?



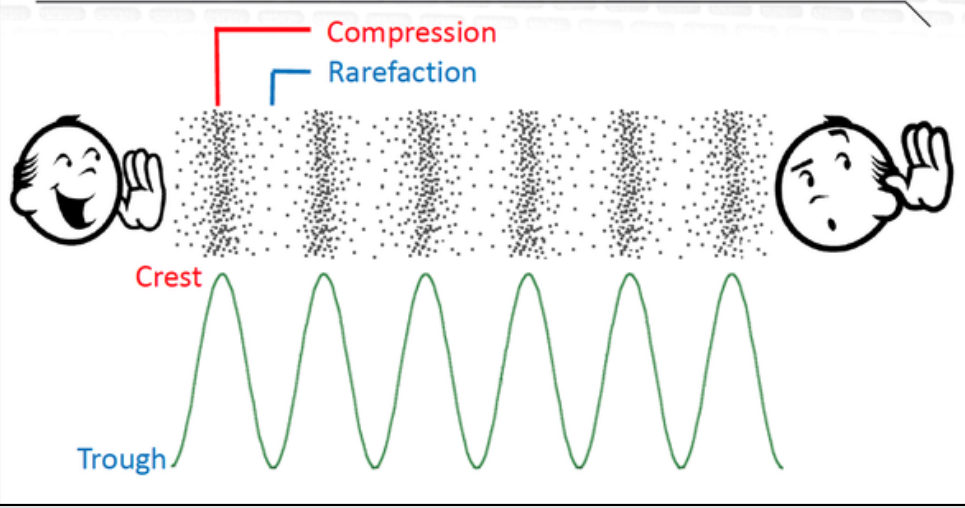
Sound is a mechanical wave transmitted by variations in pressure, transmitted through some medium. It is composed of frequencies within the range of hearing.

It can be described by what we can measure or by what we perceive. An example would be vibrations moving through air.

The sounds of billiard balls.

[Please Press Play.](#)

## Waves, Pressure, Medium, Frequency, Range of Hearing



Waves, Pressure, Medium, Frequency, Range of Hearing all are components of sound.

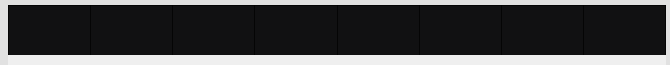
### What is Pitch?

Pitch is the speed of the vibration and the time it takes to complete a cycle. Pitch is also ordered on a scale from low to high.



Original Recording

Please Press Play.



Recording with Pitch Change.

Please Press Play.

### What is Hertz?

Hertz is usually quantified as frequencies in cycles per second.

### What is a Decibel?

A Decibel (dB) is a unit of measure that expresses a ratio between two values of a physical quantity, often power or intensity.

### What is Sound Pressure Level or

Sound Pressure Level (SPL) is a logarithmic measure of the effective sound pressure of a sound relative to a reference value. It is measured in decibels (dB) relative

# SPL?

to a standard reference level. SPL is actually a ratio of the absolute, Sound Pressure and a reference level (usually the Threshold of Hearing, or the lowest intensity sound that can be heard by most people).

[CONTINUE TO LESSON 2](#)

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## Lesson 2: Audio Equipment

### What is a mixer or mixing console?

In professional audio a mixing console or mixer is an electronic device that combines inputs and outputs, routes, changes levels, and adds or subtracts dynamics of audio signals. [Please click on video to Play.](#)

Examples of analog and digital mixing consoles.

## What is a graphic equalizer?

Equalization is the process that an electronic device uses linear filters to alter the frequency response of an audio system. Equalizers can be used to make voices more prominent, enhance an instruments tone. or combat feedback in an audio system.

Examples of graphic equalizers.

## What is a crossover?

Crossovers split the audio signal into separate frequency bands that can be separately routed to loudspeakers optimized for those bands. Usually a two way crossover will separate frequencies between high and low. An average crossover point would be 120Hz.

Examples of crossovers.

## Combining the Equalizer with the Crossover in a Digital Device.

[Please click on video to Play.](#)

## What is a(n) power amplifier?

An audio power amplifier is a electronic device that amplifies audio signals many times greater than the original content. The amplifier is typically the final electronic stage and device in a professional audio system signal chain.

Examples of power amplifiers.

## What is a loudspeaker?

A typical loudspeaker is a device which converts an electrical audio signal into corresponding sound waves or vibrations. [Please click on video to Play.](#)

Examples of loudspeakers.

[CONTINUE TO LESSON 3](#)

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## Lesson 3: Tutorial Resources

### Putting it Together.

#### Step 1 : Putting it Together.

1. The Mixer is on the left.
2. Next to the Mixer on the top right is the Dual 31 Band Graphic Equalizer.
3. Underneath the Dual 31 Band Graphic Equalizer is the Crossover.
4. Directly underneath the Crossover is the Power Amplifier.
5. The microphone shown is then plugged into the Mixer with an XLR cable.
6. Next if you want to plug in an audio device such as an iPod or phone you can do so with a Dual quarter inch cable to a stereo mini 1/8 inch connector.
7. Then plug this cable in to the Mixer using a stereo channel.
8. Next take two XLR cables and insert them into the Master output on the Mixing board.

[Please click on video to Play.](#)



9. Take the two male ends of the XLR cables and plug them into the input of the Dual 31 Band Graphic Equalizer.

## Making the Connections.

[Please click on video to Play.](#)

### Step 2: Making the Connections.

1. Take the two male ends of the XLR cables and plug them into the input of the Dual 31 Band Graphic Equalizer. Using input 1 and 2.
2. Next take two more XLR cables and connect the output of the Equalizer to the input of the Crossover. Via Crossover input 1 and input 2.
3. Now we will use a Summing XLR cable to combine output 1 for high frequencies and output 2 for low frequencies. From the Crossover to the Input of the Amplifier.
4. We are using a Summing cable for this demonstration because Channel 1 on the Amplifier will be designated for high and mid frequencies. Channel 2 will be designated for low frequencies such as Bass.
5. Last but not least take a Speakon speaker cable and plug it in to Channel 1 on the Amplifier and plug it into the speaker input located on the top or bottom.

## The Importance of Quality Cables.

Please click on video to Play.

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## Post Test

### 1. What is the best example of sound?

- A graphic equalizer.
- A power amplifier.
- Vibrations in the air.
- A three way crossover.

### 3. What is a Hertz?

- Cycles per hour.
- Cycles per minute.
- Cycles per day.
- Cycles per second.

### 5. Which is the best example of Sound Pressure Level (SPL)?

- A test tone used to analyze a room.
- The output equal to the input.
- The vibrations used to move power.
- A ratio of hearing and intensity.

### 2. Pitch is the (Please complete the sentence)

- speed of the vibration and the time it takes to complete a cycle.
- movement of air on a long wavelength.
- cord that attaches to the guitar to play in a band.
- percussion instruments used to play a rhythm.

### 4. Which answer best describes a Decibel?

- A bell shaped sound wave.
- A measure of tone and melody.
- A ratio between power and intensity.
- The speed at which sound travels.

### 6. An audio mixer is (Please complete the sentence)

- a device that hold multiple songs on a disk.
- a console that has multiple inputs and outputs.
- a blender that hold audio materials.
- a device that separates audio signals between high and low.

**7. What does a graphic equalizer do?**

- A device that separates audio signals between high and low.
- A signal processor that switches between audio and video.
- A device that amplifies sound.
- A signal processor that separates individual frequencies.

**8. A crossover performs what function?**

- A signal processor that adds distortion to the sound.
- A device that auto corrects pitch and time.
- A signal processor that separates audio signals between high and low.
- A device that modifies the signal strength.

**9. What does an amplifier do?**

- A digital device that makes frequencies.
- A device that increases sound strength.
- A calculator that increases sound.
- A music storage device.

**10. What is an example of a loudspeaker?**

- A cabinet that reproduces sound.
- A crate that is made out of wood.
- A polymer box that splits sound up.
- A box that holds music materials.

**SUBMIT**

Please click on "Submit" before continuing. Thank you.

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## Questionnaire

Thank you for participating in “Designing a Professional Sound System” and taking the time to answer the module questions. Now I would like to know what you think about the module itself. **Please choose a numbered response.**

**1=Strongly Disagree**

**2=Somewhat Disagree**

**3=Neutral**

**4=Somewhat Agree**

**5=Strongly Agree**

**1. The lessons were easy to follow.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**2. The pictures were clear.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**3. The sections in the model were well divided.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**5. I learned something new from this module.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**7. This module helped inform me about sound theories.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**9. I better understand what pitch is.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**11. I better understand what mixers are.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**13. I better understand what a loudspeaker is.**

**4. The length of the module was manageable for me.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**6. The information provided was enough to answer the questions.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**8. I better understand what sound is.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**10. I better understand what hertz is.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**12. I better understand what amplifiers are.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**14. I feel I can make well-informed choices about audio**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**equipment in the future.**

- 1 Strongly Disagree
- 2 Somewhat Disagree
- 3 Neutral
- 4 Somewhat Agree
- 5 Strongly Agree

**15. What did you find particularly useful about the module?  
(Please write below)**

**Comment**

**16. What suggestions do you have for improvement?  
(Please write below)**

**Comment**

**SUBMIT**

Please click on "Submit" before continuing. Thank you.

**THE END**

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## About Us

Creative Sound & Lighting Systems is a family owned business operating in Hawaii since 1990. Our commitment is to provide the best quality and selection of brand name products with the most available on-island inventory. Our ongoing goal is to provide competitive pricing and service after the sale to all of our customers. Creative Sound & Lighting Systems offers a full range of products and services. Please check us out in Kaneohe or phone 808.236.2766 for more information.

You will find top quality name brands and products at Creative Sound & Lighting Systems. We offer the best "in stock – on island" inventory of speakers, mixers, turntables, amplifiers, cases, racks, lights and accessories. We are not limited to O'ahu sales... We are pleased to sell and service customers on the outer islands, Las Vegas and Guam.

Our sales staff are knowledgeable in the areas of pro audio, DJ product and Club/EFX lighting applications. All of our staff has practical "hands on" experience as both pro audio and DJ technicians. Free written quotes are available for your consideration. We invite you to visit our Showroom or send us an email with your inquiry

## Contact Us

Creative Sound & Lighting Systems is a full-service Retail, Design and Installation company with over 25 years of knowledge and experience in the Audio-Visual and DJ industry. Our service department serves as the exclusive JBL warranty station on Oahu in addition to providing repair and maintenance on select products for our customers.

Our courteous, professional sales staff can assist with your purchases and can also offer technical solutions for your individual component or system.



Our technical staff can work with you in designing your Sound, Lighting or Video system no matter how small or large. We provide a variety of product and price options for your consideration. A professional team of in-house installers are available to install and integrate your system into your venue of choice.

Stop by our retail store at 46-003 Alaloa Street in Kaneohe. We welcome the opportunity to service you!

## Our Services

Please click on video to Play.

## Educational Contact



Ken Miyamoto is a graduate student at the University of Hawaii Manoa, he is enrolled in the Educational Technology Master's program. His email address is <mailto:kenmiyam@hawaii.edu>.

ADDITIONAL RESOURCES





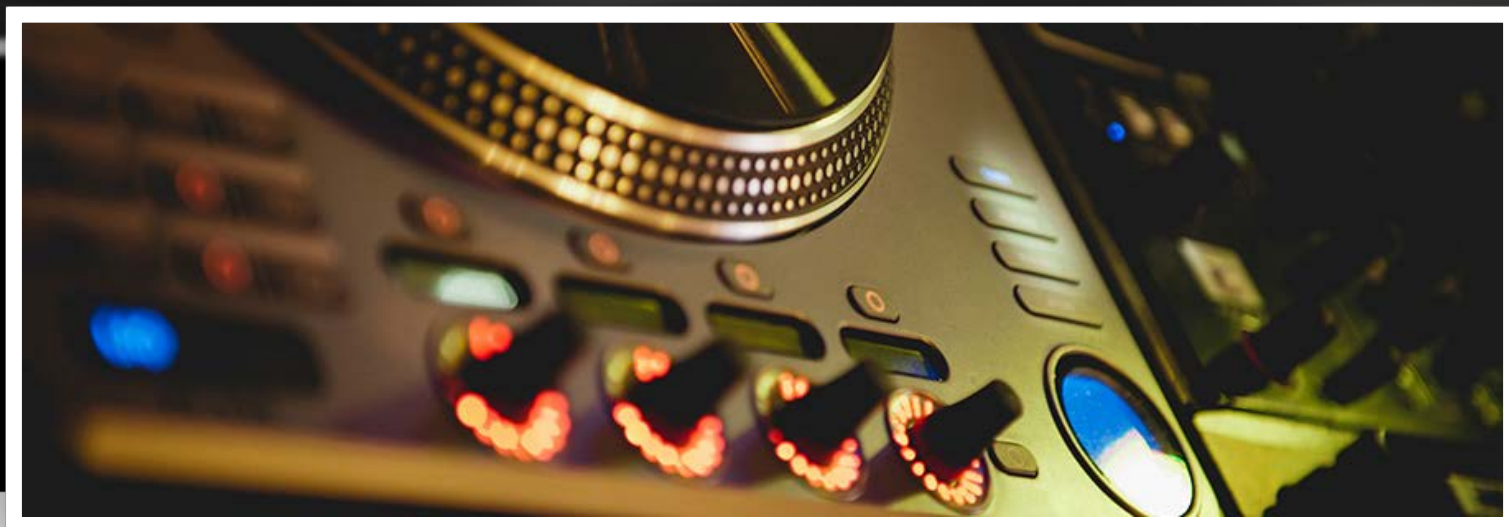
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## Additional Resources

Pre-Test and Post-Test Answer Key



kenpre\_posttestv2.pdf

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