



SCIENCE OF SOUND AND MUSIC

Tuesdays, January 25-May 3 (no class February 15, March 15, or April 5; 12 weeks)

9:30am-10:45am

Ages 8-10

Music is a complex form of art integrated with science. Students study the physics and physiology of sound and how it is interpreted, and create sound and music with their own instruments and composition skills. All lab costs are included in registration fee. Students should bring a laptop to conduct the coding project during the last week of class.

Instructor: Tina Oresteen, BSc

Location: Discover Science Center Peachtree City

Course fee: \$220 OR \$20/lab

10% off sibling discount

Register for full semester or individual labs.

LAB SCHEDULE:

What is Sound? – Tuesday, January 25

We start the semester by investigating what sound is, how we measure sound, and how it affects our daily lives.

Biology of Sound – Tuesday, February 1

Students study our sense of hearing, and the physiology behind how our ears capture sound waves, and our brain interprets what sounds are and where their source was.

The Speed of Sound – Tuesday, February 8

This week we investigate how sound travels through matter as we experiment with sound through gases, liquids and solids, and determine why it changes through different materials.

How Speakers Work – Tuesday, February 22

We disassemble speakers to see how they convert electrical energy into mechanical energy, and then into the sound waves we hear.

Amplification – Tuesday, March 1

We investigate what amplification is, how it works and create a tool to use for amplification of music.

Ultrasonic Sounds – Tuesday, March 8

Students investigate high-frequency sounds that humans can not hear, but learn how some animals use them for echolocation, and how they can be used for medical purposes (ultrasounds).

Pitch and Tuning – Tuesday, March 22

In lab today, students determine the difference between pitch and tone to study the quality of sound, and learn how tuning an instrument produces the correct pitch.

Create an Instrument: Pianos and Harmonicas – Tuesday, March 29

Students use their knowledge of sound to create instruments that produce vibrations using different mechanisms (percussion versus wind instruments).

Strange Noises – Tuesday, April 12

This week we investigate whether trees make noise when they grow, if planets make noise, and what “white” noise actually is.

Create an Instrument: Flutes and Drums– Tuesday, April 19

Students use their knowledge of sound to create instruments that produce vibrations using different mechanisms (wind versus percussion instruments).

Psychology of Sound – Tuesday, April 26

We discuss the effects of sounds on the brain, and investigate how different musical pieces generate emotional responses in people who hear them.

Synthetic Music Composition – Tuesday, May 3

Students learn to compose their own music through coding. We cover the basics of coding language, write algorithms, and develop computational thinking skills to create and share custom music. Students should bring a laptop to conduct the coding projects (the web-based platform we are using does not work on phones or tablets).