



Course Information

Meeting Time & Location: T&R 11:20 - 12:20PM at B1-27 (lecture),
T 9:10-11:10 at W4-23 (lab)

Instructor: Joo Won Park

Email: jpark@ccp.edu

Phone: 215-751- 8296

Office Hours: TBA @ Room M2-13

Overview

Acoustics is a scientific study of sound. In this class, we will therefore study music using languages and ideas developed in science. More specifically, you will learn how to measure, think, and apply musical ideas using numbers, logic, and experiments. The course is designed so that you gain a better understanding of the nature of the sound so that you can become a better performer and/or sound technologist.

Required Materials

- **Textbook** : *Musical Acoustics* by Donald Hall
- **Access to Smartphone or Computer**: download unit converter, calculator, sound level meter, and other physics-oriented apps.
- **Access to an instrument** : I will ask you to bring your instrument at certain classes.

Student Learning Outcome

Upon completion of this course, you will be able to:

- explain musical terms with scientific and mathematical language
- use scientific methods to gain knowledge of acoustic and musical principles
- use technology to analyze and demonstrate acoustic principles
- understand the nature of human hearing mechanism and psychoacoustics
- understand and demonstrate the acoustic nature of instruments and spaces

Expectations

- Come to every **classes and labs** on time and be ready to talk about the subject matter. Participation is a portion of your final grade. If you miss more than two weeks of the class time, I reserve the right to drop you from the class. For every tardies to class beyond your third, I reserve the right to drop your final grade by 5% . If you miss more than a month of class time, excused or unexcused, you will not be able to pass the class.
- You are responsible for all material covered in the class regardless of your attendance record.
- Do your assignment and learn the ideas it presents. Late assignments are not accepted.
- Be honest in the work that you do. Plagiarism means presenting someone else's work (be it ideas, words, or music) as your own. This and all other forms of cheating are absolutely

forbidden. Consequences for academic dishonesty may include earning a failing grade for the course or even expulsion from the college.

- Check your CCP email and the class website regularly. I will email schedule/assignment changes. The class website will contain files needed for homework and project
- Do NOT email your assignments unless instructed. I will not be responsible for undelivered emails.

Accommodations for Students with Disabilities

Students who believe they may need an accommodation based on the impact of a disability should contact their instructor privately to discuss their accommodation letter and specific needs as soon as possible, but preferably within the first week of class. If you need to request reasonable accommodations, but do not have an accommodation letter, please contact the Center on Disability, room BG-39, phone number 215-751-8050.

Grading

Below is the final grading formula for the class.

- Lab Assignment 40%
- Homework 15%
- Class Participation 10%
- Mid Term 15%
- Final Exam 20%

A = 90-100% B = 80-89% C = 70-79% D = 60-69% F = 0-59%

Semester Schedule

Week 1	Introduction to sound and basic unit conversion Lab: lab overview & software overview
Week 2	Pitch and intervals Lab: Frequency and overtones
Week 3	Scales and chords Lab: Intonation and temperament
Week 4	Amplitude and Phase Lab: Introduction to computer simulation
Week 5	Fourier Transform Lab: Spectrogram and its applications

Week 6	Wave generators and filters Lab: Composition Project
Week 7	Midterm Exam Lab: Composition Presentation
Week 8	Spring Break
Week 9	Acoustics of instruments I Lab: Build a string instrument
Week 10	Acoustics of instrument II Lab: Build a wind instrument
Week 11	Room and Resonance Lab: Build a virtual instrument
Week 12	Psychoacoustics Lab: Musical illusions
Week 13	Sound reinforcement Lab: Composition Project
Week 14	Class Summary Lab: Work on composition project
Week 15	Review Lab: Make up and Catch up
Week 16	Final Exam