

Fundamentals of Music and Sound

TUESDAYS AND FRIDAYS, 12:00 - 1:50 PM | 326 WEST HALL

INSTRUCTOR

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Office Hours: Mondays, 1:30–3:00pm

CLASS INFO + POLICIES

Course Description

In this course, we will build a shared language about music and sound that will empower us to boldly and creatively communicate with others about our musical experiences. We will first learn several psychoacoustic paradigms for measuring and describing sound, including the frequency/pitch relationship, timbre, acoustic intensity, duration, and location. We will then turn to foundational concepts of Western music notation and theory, including rhythmic notation, pitch, scales, and chords, as well as the concepts of tonality and harmonic function. Finally, we will discuss a variety of topics regarding music and technology using the psychoacoustic and music-theoretical frameworks we learned about earlier. We will consider the relative merits of acoustic and music-theoretical descriptions of film music; we will consider the tools and ideas behind the art of sampling; and we will examine the principals underlying algorithmic assessments of music, as used by streaming services like Spotify.

Learning Outcomes

- Students will understand the basics of sound as a physical phenomenon.
- Students will hone their abilities to describe sounds qualitatively and to relate qualitative descriptions to the acoustic conditions that give rise to them.
- Students will master the foundational concepts underlying Western musical notation, including symbolic systems for describing pitch, rhythm, dynamics, and articulations.
- Students will be able to interpret musical notation in performance.

- Students will listen to, discuss, and write about a diverse body of music spanning multiple media and cultural contexts.
- Students will build the skill necessary to advance to Music and Sound I.

Course Materials

This course does not require a textbook. Students are required to bring several tools with them to class: (1) a phone or computer with internet access, (2) paper on which to write, (3) their kazoo (which will be provided to them by the instructor), and (4) manuscript paper, which can be purchased from a variety of sources or printed for free from websites such as www.blanksheetmusic.net. Manuscript paper will not be required until the second unit.

Accessibility

Students with diverse learning styles and needs are welcome in this course. If you have a physical, psychological, medical, or learning disability, or any other consideration that may impact your participation in the course, please reach out to me and/or the Disability Services for Students (dss@rpi.edu). I or DSS will work with you to determine what accommodations are necessary and appropriate. All information and documentation you provide in that process will be held confidential.

Academic Integrity

The Rensselaer Handbook of Student Rights and Responsibilities and The Graduate Student Supplement define various forms of Academic Dishonesty and you should make yourself familiar with these. In this class, all assignments that are turned in for a grade must represent the student's own work. In cases where help was received, or teamwork was allowed, a notation on the assignment should indicate your collaboration. Submission of any assignment that is in violation of this policy will result in a failing grade for that assignment. A subsequent infraction will result in immediate failure of the course and could lead to probation, suspension, or expulsion.

Attendance

Attendance is mandatory. A student is permitted to miss two classes over the course of the semester without penalty. Beyond this, any unexcused absence will result in lowering the overall grade by half a letter grade (A to A-, etc.). If a student misses a

class, they are responsible for catching up on the material covered. Two latenesses are treated as equivalent to an absence. Contact your classmates or schedule an appointment with your instructor to make sure you are up-to-date. Excused absences must be documented by an official form processed through the RPI Student Experience office ([http:// studentlife.rpi.edu/student-success/excused-absence](http://studentlife.rpi.edu/student-success/excused-absence)). Whenever possible, please inform the instructor of a planned absence by email at least a week beforehand.

Email

I will answer all course-related email within 48 hours of receipt. Do not wait until the night before an assignment is due to send an important question—I might not be able to respond in time.

ASSIGNMENTS + GRADING POLICY

Homework assignments for this class are often designed to introduce new materials that will be discussed in the next meeting. Many class meetings will begin with a μ Quiz, a very brief, hopefully easy quiz based on the homework due that day. Homework assignments will vary widely, including brief readings and writing tasks, videos to watch, online exercises, and worksheets.

Grades will be calculated based on the following rubric.

| | |
|--------------------------------|-----|
| Class Participation | 10% |
| Homework | 25% |
| μQuizzes | 5% |
| Projects | 25% |
| Notation Exam | 25% |
| Final Paper | 10% |

Late homework will be graded solely at my discretion. For everyone's good, please communicate openly when you are going to be late with an assignment so I can plan accordingly. The same goes for questions about your grades. If you make an earnest effort at this class, I will always be happy to make opportunities for you to make up missed work or retry failed assignments.

Important Assignments

Friday, September 6th — Class Corpus

You will choose two pieces of music that are personally significant to you: one that you love and one that you (love to?) hate. We will collect the whole class' list of loved and hated music in a database, the Class Corpus. We will draw musical examples from the corpus throughout the semester, using it to illustrate concepts from acoustic intensity to tonal function. Fun!

Friday, September 27th — Group Project: Description Telephone

Your team will choose a piece from the Class Corpus and work together to describe it using the qualitative perspectives on sound that we covered in Unit I: pitch height, timbre, duration, intensity, location, and source. Using visualizations and prose, but not audio, you'll present your description to the class and the rest of us will try to guess what piece you're presenting!

Tuesday, October 29th — Notation Unit Exam

This exam will cover all of the topics covered in Unit II. Please see the class schedule below for a more detailed list of topics.

Tuesday, November 19th — Project: Harmonic Analysis Presentations

You will make a harmonic analysis of a brief excerpt from a piece of music that you like. The piece can be of any genre you want, as long as you can isolate a clear bass line. You will make a rudimentary notated transcription of the piece and then compare the harmonies used in it with the basic patterns of tonal function that we learned about in class.

Tuesday, December 10th — Final Paper Due

You will choose one of the pieces you originally submitted to the Class Corpus and describe how your perspective on the piece has changed in light of what you've learned in this class. Does an expanded vocabulary for describing sound impact your perception of the music? Do you experience the chord progressions in the piece differently than you did before taking this class?

CLASS SCHEDULE

The schedule given here is subject to change. You can find an up-to-date version of the class schedule including assignments at this link: <http://matthewchamberlain.info/teaching/fundamentals-of-music-and-sound>. I strongly encourage you to check this website before each class.

FRIDAY AUGUST 30TH, 2019

Introduction: What is This Class About?

We'll meet one another, go over some class logistics, and then ask the question: What's the difference between sound and music?

UNIT I: DESCRIBING SOUND

FRIDAY SEPTEMBER 6TH, 2019

Six Qualitative Perspectives on Sound

We begin with a stirring examination of the physical basis of sound. Then we explore six perspectives that help to describe it: pitch, timbre, intensity, duration, location, and source.

TUESDAY SEPTEMBER 10TH, 2019

Six Qualitative Perspectives on Sound

How is it that some sounds seem "pitchy" while others do not? What is the physical basis for "pitchiness" and how is it that some sounds are higher or lower than others?

FRIDAY SEPTEMBER 13TH, 2019

Timbre is not Wood

What's the difference between Beyoncé and a classroom full of engineers playing Beyoncé on kazoos?

TUESDAY SEPTEMBER 17TH, 2019

Another Long-winded and Intense Class

We'll consider how length is a ubiquitous metaphor for duration and we'll connect the ideas of loudness, dynamic, and acoustic intensity.

FRIDAY SEPTEMBER 20TH, 2019

Wherefore Art Thou, Sound?

The location of a sound-producing body affects the way in which its vibrations reach our ears. At the same time, our conception of the source of a sound profoundly shapes our response to it.

TUESDAY SEPTEMBER 24TH, 2019

Mediation

As a physical phenomenon, sound always travels through a medium. In a different sense, so too does music. We'll think about headphones, car radios, television, movies, and other media that make the conditions in which we experience music.

FRIDAY SEPTEMBER 27TH, 2019

Project: Description Telephone

You will put your musical descriptions to the test and see how well the class can guess which pieces are yours.

UNIT II: FUNDAMENTALS OF NOTATION

TUESDAY OCTOBER 1ST, 2019

Introduction to Musical Notation

We'll take a whirlwind tour through the history of (Western) musical notation and discuss some fundamentals principals thereof.

FRIDAY OCTOBER 4TH, 2019

The Basics of Rhythm

We'll talk about the lengths of notes and rests; we'll gawk at flags and gaze longingly at beams; and we see how we can tie it all together to make a nice whole (note).

TUESDAY OCTOBER 8TH, 2019

Meter, Time Signatures, and Tempo

What is a beat, anyways, and how can we write them down? We'll also talk about repeating patterns of rhythm through meter and time signatures. Finally, we'll examine the bizarre relativism of tempo.

TUESDAY OCTOBER 15TH, 2019

The Basics of Pitch

We'll distinguish between pitches and pitch-classes and we'll learn about several ways of visualizing them: graphing them as integers, using the keyboard (a la piano), and on a staff with clefs.

FRIDAY OCTOBER 18TH, 2019

Oops! On Accidentals, Leaps, and (Tentative) Steps.

What's the difference between a leap and a step, and what does that have to do with the moon. And how on earth can we fix the bizarre staff system using accidentals?

TUESDAY OCTOBER 22ND, 2019

Intervals: Measuring Distance in Pitch Space

Sort of like with pitches and pitch classes, we will discuss generic and specific intervals. We will enjoy using the word "notch" and we will have even more fun thinking about addition and subtraction in mod-12 space.

FRIDAY OCTOBER 25TH, 2019

How Pitch Affects Rhythmic Notation

We'll practice identifying intervals and we'll see how pitch impacts the way in which we notate rhythms. We will also discuss BEAMING.

TUESDAY OCTOBER 29TH, 2019

Exam: Fundamentals of Notation

This exam will cover everything discussed in Unit II (Fundamentals of Notation).

UNIT III: PITCH AND RHYTHM AT LARGER "SCALES"

FRIDAY NOVEMBER 1ST, 2019

Tonality, Scales, and Pitch Hierarchy

What are scales and what do they contribute to music? How are they made and how do they suggest a hierarchy amongst pitches?

TUESDAY NOVEMBER 5TH, 2019

The Chords that Bind Us?

We will discuss a variety of chords through the lenses of cardinality and quality. Triads and seventh chords will be center of our focus for the remainder of the course.

FRIDAY NOVEMBER 8TH, 2019

Relating Chords and Scales

We can think of chords as drawing from scales and further organizing them into a palpable hierarchy.

TUESDAY NOVEMBER 12TH, 2019

Tonal Harmonic Function

By extending the idea of scale degrees to Roman numerals, we'll learn how chords are typically arranged in tonal music.

FRIDAY NOVEMBER 15TH, 2019

The Idea of Form

Examining musical examples from a variety of media and traditions, we will discuss how rhythm, harmony, and other musical factors contribute to our sense of musical structure.

TUESDAY NOVEMBER 19TH, 2019

Group Project: Transcription Idol

The tables are turned when you have to teach the class how to sing a song.

UNIT IV: MUSIC IN A DIGITAL AGE

FRIDAY NOVEMBER 22ND, 2019

A Practical Introduction to Digital Audio

We will learn how DAWs, Drum Machines, and Virtual Instruments have revolutionized the production of music.

TUESDAY NOVEMBER 26TH, 2019

The Fine Art of Sampling The Fine Art of Sampling Fine Art

We will examine the tools and ideas behind sampling as a compositional practice.

FRIDAY NOVEMBER 29TH, 2019

NO CLASS — THANKSGIVING

Stoically, we will consider the meditative value of washing dishes.

TUESDAY DECEMBER 3RD, 2019

Virtual Instruments and Digital Orchestras

We will take a closer look at the tools and methods used to make music for film, television, and video games.

FRIDAY DECEMBER 6TH, 2019

Spotify and the Art of Relaxation

We will examine the cultural force of streaming services like Spotify and Apple Music, as well as the ubiquitous access to music they facilitate.

TUESDAY DECEMBER 10TH, 2019

Regarding Your Precious Feelings

In light of everything else we've discussed, how can we talk about our feelings in response to music? Is music a vehicle for social manipulation, a dangerous tool, a beautiful weapon, something more boring, something more sinister?