Experience Math, Music and Coding
July 14-18, 2025 | $850

PROGRAM OVERVIEW

Can you feel the beat? Have you ever wondered why music sounds the way it does? Why are some combinations of notes pleasant while others are unpleasant? Why do some sounds make us feel joy and others bring nostalgia? Students in Drexel's Math, Music and Coding Camp will investigate these harmonic questions through the lens of mathematics. In this one-week program presented by the Department of Mathematics, we'll explore how math can help us make sense of different aspects of sound and music. Each day, students will apply musical and mathematical concepts using a coding platform called Sonic Pi, an open-source live coding language for music creation and performance used by professional musicians, VR developers, and programmers. This program is open to students regardless of musical background. We will be using algebra and trigonometry, but calculus is not a prerequisite.

PROGRAM DETAILS

DATES .... July 14–18, 2025

LOCATION .... Drexel University, Philadelphia, PA, 19104

FORMAT .... On-campus, commuter, optional residential stay (additional fee).

TUITION COST $850

ELIGIBILITY .... Rising high school juniors and seniors.

DEADLINE .... June 20, 2025

DISCOUNTS .... Early Bird (Pay non-refundable tuition by April 30, 2025): $800

Sample Schedule | July 14-18, 2025

Program content and sequence may change due to weather, staff schedules or other circumstances.

DAY 1
Pythagorean Tuning System

- Introduction to tuning systems
  - » Pythagorean tuning
  - » Just intonation
- What we hear: the mathematics of the four main attributes of sound
  - » Coding introduction
  - » Writing your first bit of "musical code"

DAY 2
Western Music Theory

- Chords, Scales, and Rhythm
- How modern (western) music theory evolved from the Pythagorean system
- Using mathematics to explain why/how we build chords and scales like we do
- Implementing chords and scales with code
  - » **Mini project 1:** write a melody with a chord progression

DAY 3
Outside the Box

- Looking at non-Western/European music theories
- Using mathematics as a bridge between different musical cultures
- Applying different techniques of composition with code
  - » **Mini project 2:** Making music with non-Western scales and rhythms

DAY 4
Sampling

- Working with non-musical sounds to make music
- Exploring the mathematics behind sampling, adding effects, and modifying recorded sounds
- Working with "found sounds"
  - » **Mini project 3:** Record a non-musical sound and make something musical out of it with code

DAY 5
Recital Day!

- Spend the first half of the day refining our final compositions.
  - » Bring together everything from the first four days
- After lunch we'll have our recital where we'll each share what we worked on and what we hope to learn and do next

APPLY TODAY: drexel.edu/summer/arts-sciences

QUESTIONS? Email us! coas@drexel.edu

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