

BROADEN YOUR FRAME

Mathematics & Music: Quantitative Emotions SEMINAR SERIES 2026

SPEAKER

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FOR INFORMATION

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Music is a universal language. It needs no translation, but it reaches the hearts and minds of all human beings. What are the secrets of its beauty? What makes it communicate emotions like joy and tranquility rather than sadness or rage? How do composers create the wonders we all listen to? This course will guide us on an in-depth tour of the inner mechanisms of music. We will explore the meaning of melody and the relationships between mathematics and harmony. We will start with harmonic ratios and progress through advanced chords in classical and jazz music. We will learn about the surprising circle of fifths and touch upon the concept of counterpoint. Then, we will examine some of the main musical structures, looking into the form of songs and sonatas. Surprisingly, we will see that mathematical concepts like periodicity, fractals, and topology have musical counterparts. We will consider how virtuosity and instrumentation help build emotions, listening through a limitless series of incredible pieces. We will also explore the connections between music and movies, music and paintings, music and computers. We will discuss the role of artificial intelligence in music, from the creation of playlists, to the creation of music itself by quantum computers. Throughout, we will examine how the scientific literature has addressed these topics in what Johann Sebastian Bach called "the Science of Music". A rich selection of listening examples and videos will accompany our journey.

Module 1

1 OCTOBER 2026 | 6:15-7:45 pm

Room TBA

Unveiling the Mystery of Harmony and Musical Scales

Module 2

6 OCTOBER 2026 | 6:15-7:45 pm

Room TBA

Reading Musical Sentences

Module 3

13 OCTOBER 2026 | 6:15-7:45 pm

Room TBA

More Mathematics for More Music

Module 4

15 OCTOBER 2026 | 6:15-7:45 pm

Room TBA

The Theoretical Thinking Behind Music and Complex Musical Architectures

Module 5

20 OCTOBER 2026 | 6:15-7:45 pm

Room TBA

Music and Emotions

Module 6 + final assignment

22 OCTOBER 2026 | 6:15-8:15 pm

Room TBA

Music and AI, when Algorithms help Creativity, and the Future

