

## **An Ear for Music:** Exploring how our auditory mechanisms constrain musicality

*OLLI Spring 2024, Friday 1:30pm in Illinois Classroom & Zoom, beginning March 1*

### **Week by Week Syllabus: *The Plan***

1. **Basics** of sound waves that comprise music.
  - Demonstration of major “blind spots” in our hearing that limit our appreciation of musical sounds.
  - Key concepts and recurring themes.
  - Visualizing sound.
  - The essential role of harmonics.
  - The Octave as a fundamental basis for musical scales.
  
2. The role of **resonance** in creating musical sounds, with demonstrations.
  - How harmonics are generated.
  - How complex musical tones are built up.
  - More ways of visualizing complex tones.
  
3. The **human ear** and musical perception.
  - How it works, and where it falls short.
  - Capabilities and limitations with demonstrations.
  - Auditory illusions; pitch discrimination.
  - Key features of the ear that will inform later sessions.
  
4. A simplified overview of **musical scales**.
  - How conventional musical scales can be understood, despite their developmental complexity.
  - Microtonal scales and (perhaps) non-Western scales
  - Musical notation and the legacy of its historical development.
  - Key transposition.
  
5. Musical instruments:
  - Classifications, key features.
  - **String** instruments and how they work: Excitation, frequency control, and getting the sound out.
    1. The way timbres emerge and are controlled.

6. More musical instruments:

- **Acoustic Pipe** instruments and how they work.
- The challenges of frequency control
- Some other instruments and how they work.
- What aspects of them control their timbres.

7. **Singing** and the human voice as a special kind of acoustic pipe instrument.

- The crucial role of harmonics.
- Formants and how we perceive them.
- Key differences between male and female voices.
- Visualizing voices.

8. **Exploring why some musical constructs sound better to us than others:**

Getting to the goal of the course.

- Theories of dissonance, with demonstrations.
- Chords and their appeal.
- Temperament and Pythagorean Scales
- The essential role of harmony in music, and how it works both from a physical and psycho-acoustic standpoint.
- What we understand about music and what remains mysterious.