


## 40,000 YEARS OF MUSIC TECHNOLOGY


**Course Description:** Over 40,000 years ago humans fashioned flutes from bone; since then music-making has continued to motivate and to be shaped by technological innovations. This course surveys the relationship between music and technology from the Paleolithic Age to the present day. We will examine the origins and impact of diverse musical instruments, with attention to connections between musical and technological developments, the reasons instruments are accepted, modified or abandoned, and debates about the effects of new technologies on music. We will consider how music technologies work from physical, psychoacoustic, economic and cultural perspectives. By studying the socio-cultural history of such instruments as the violin, piano, electric guitar and synthesizer, we will gain an understanding of the interplay between technological change and the enduring human need for music.

**Learning Goals:** By participating in this course, you'll develop abilities to:

1. Situate music technologies in their cultural environment and historical period
2. Relate music technologies to major musicians and musical works
3. Identify affordances and constraints, both musical and social, of diverse music technologies
4. Explain factors, including social institutions and cultural values, that promote or resist music-technological change
5. Comparatively analyze the roles of social institutions, economic systems and aesthetic values in the creation and reception of music technologies in different historical periods and parts of the world
6. Identify aesthetic, economic, and social trade-offs involved in transitions from one music technology to another
7. Evaluate claims around new music technologies by comparing them to historical precedents

### **Course Materials:**

 Deirdre Loughridge, *Bone Flute to Auto-Tune: Forty Thousand Years of Music Technology* (University of Chicago Press, 2026). \$30 paperback or \$21 ebook through [Chicago Discount Digital Coursebooks](#)

 A Spotify or YouTube Music Premium account to access the listenings on demand without commercial interruptions. While accessing without a premium account is possible, I strongly recommend a premium account for the duration of this course for the best listening and learning experience. Premium subscriptions also deliver more revenue to artists than does ad-supported listening. \$7.99/month student rate for YouTube or \$6.99/month student rate for Spotify

### **Coursework:**

- 10% Weekly Participation
- 30% 2 Written Assignments
- 60% 4 Unit Tests (#1 = 10%, #2 and #3 = 15% each, #4 = 20%)

<b>Class Session Topic</b>	<b>Reading/Listening</b>	<b>Milestones</b>
<b>UNIT 1 (weeks 1-4)</b>		
<b><i>Our Lives with Music Technology</i></b>		
Introductions	Introduction	
The First Musical Instruments?	Chapter 1	
Discussion: What is (your relationship with) music technology?	· Reich, “My (Ambiguous) Life with Technology” · Pamela Z, “A Tool is a Tool”	
Music Writing	Chapter 2	
Sound & Number	Chapter 3	
<b><i>How Do(n’t) Music Technologies Change</i></b>		
From Found Objects to Valved Brass	Chapter 4	
Viols and Violins	Chapter 5	
Discussion: Musical Instrument Museums	· Gates, “Met Gives Music Gallery a Makeover” · “Musical Instruments: Mapping the Art of Music” · additional exhibit examples	Start Assignment 1 (museum exhibit)
Orchestras	Chapter 6	
Saxophone	Chapter 7	
		Unit Test 1
<b>UNIT 2 (weeks 5-8)</b>		
<b><i>Values in Musical Instrument Design</i></b>		
Voice as Instrument	Chapter 8	
Organ, “King of Instruments”	Chapter 9	
Discussion: Tradition and Innovation	Bijsterveld and Schulp, “Breaking into a World of Perfection”	
More Keyboard Instruments	Chapter 10	
Instruments of Ethereal Tone	Chapter 11	Assignment 1 Due
<b><i>Transculturation</i></b>		
Cymbals	Chapter 12	
Banjo	Chapter 13	
Discussion: Transcultural Machine Learning	Hantrakul, “AI Song Contest 2022 Process Document”	Start Assignment 2 (musical tool analysis)
Harmonium	Chapter 14	
		Unit Test 2
<b>UNIT 3 (weeks 9-12)</b>		
<b><i>Rationalization and Standardization</i></b>		
Tuning Trouble	Chapter 15	
Metronomes	Chapter 16	
Discussion: Standardization, For and Against	· Isacoff, <i>Temperament: The Idea that Solved Music’s Greatest Riddle</i> , 3-8 · Duffin, <i>How Equal Temperament Ruined Harmony</i> , 15-18	Assignment 2 Progress Due

A440, CD, MP3, MIDI	Chapter 17	
<b>Gender in the Mix</b>		
Accordions	Chapter 18	Assignment 2 Due
Electric Guitar	Chapter 19	
Discussion: Gender in the Mix	· Part 6 Perspective · Berlatsky, “She Shreds”	
Electronics Explorers	Chapter 20	
Mainstreaming Electronic Sounds	Chapter 21	
		Unit Test 3
<b>UNIT 4 (weeks 13-16)</b>		
<b>Becoming a Musical Instrument</b>		
Player Piano & Phonograph; Microphone	Chapter 22 Chapter 23	
Tape, Multitracking & Looping	Chapter 24	
Discussion: Play it again, or different this time?	Herington et al, “Musician’s Ethical Concerns about AI: an Interview Study”	
Turntables and Samplers	Chapter 25	
Drum Machines	Chapter 26	
<b>Hopes &amp; Fears</b>		
The Promise of Computers	Chapter 27	
Auto-tune Debates	Chapter 28	
Discussion: Hopes & Fears	Part 8 Perspective Clayton, <i>Uproot</i> , 177-190	
Algorithms and the Internet	Chapter 29	
What’s Next?	Chapter 30	
		Unit Test 4

## Readings

Steve Reich, “An Introduction, or My (Ambiguous) Life with Technology,” *Sound Unbound: Sampling Digital Music and Culture*, ed. Paul D. Miller (MIT Press, 2008), 1-4.

Pamela Z, “A Tool is a Tool,” in *Women, Art, and Technology*, ed. Judy Malloy (MIT Press, 2003), <https://archive.pamelaz.com/tool.htm>

Anita Gates, “Met Gives Music Gallery a Makeover,” *New York Times* (March 12, 2019): <https://www.nytimes.com/2019/03/12/arts/metropolitan-museum-reopens-music-gallery.html>

“Musical Instruments: Mapping the Art of Music,” The Met on soundcloud (2019): <https://soundcloud.com/metmuseum/sets/musical-instruments-mapping-the-art-of-music>

Darcy Kuronen, “Percussion Instruments,” in *MFA Highlights: Musical Instruments* (Boston: MFA Publications, 2004), 23-39 (selected pages)

- Karin Bijsterveld and Martin Schulp, "Breaking into a World of Perfection: Innovation in Today's Classical Musical Instruments," *Social Studies of Science* 34 (2004): 649-674.
- Lamtharn Hantrakul, "Enter Demons and Gods: AI Song Contest 2022 Process Document," <https://lamtharnhantrakul.github.io/enter-demons-and-gods/>
- Stuart Isacoff, *Temperament: The Idea that Solved Music's Greatest Riddle* (New York: Alfred A. Knopf, 2001), 3-8.
- Ross Duffin, *How Equal Temperament Ruined Harmony (And Why You Should Care)* (New York: W. W. Norton & Co., 2007), 15-18.
- Noah Berlatsky, "She Shreds: guitar magazine empowers women to rip up stereotypes," *The Guardian* (Sept 25 2015): <https://www.theguardian.com/music/2015/sep/25/she-shreds-women-guitar-magazine-st-vincent>
- Jonathan Herington, Raffaella Borasi, Benjamin J. Guerrero et al, "Musician's Ethical Concerns about AI: an Interview Study," *AI & Society* 41 (2026): 1075-1088. <https://link.springer.com/article/10.1007/s00146-025-02601-6>
- Jace Clayton (aka DJ Rupture), *Uproot: Travels in 21<sup>st</sup>-Century Music and Digital Culture* (New York: Farrar, Straus and Giroux, 2016), 177-190.