

Exploring the Musical Mind

MUS/COGS 20 Syllabus, Summer Session II, 2025

Course Description

This course, Exploring the Musical Mind, co-listed with the Music and Cognitive Science departments, aims to deliver introductory-level knowledge in the field of musical cognitive science. The wide-ranging content includes a reflection of the essence of music, the musical minds of the composers and listeners, musical expectations and surprise, musical knowledge construction w.r.t. language, embodiment, enactivism, and biosemiotics. In terms of cognitive science, we will discuss attention, expectation, predictive processing, action-perception loops, and Gestalt theories from the perspective of musical perception and cognition. I hope this course will be an organic combination of music and cognitive science, where the internal mechanisms of the musical mind could be revealed.

This course is designed to be intellectual, where you might find many of the ideas and concepts arcane in the first place. Commensurately, these topics will be accompanied by readings ranging across various levels (from introductory to professional). These readings aim to expand your horizon and open the floor if you'd like to dive into these topics. Almost all the readings are optional: you are free to choose what to read or not. The summer course is expected to be lighthearted and more interest-oriented. You only need to peruse the readings based on your interest to complete the final paper project. For lecture quizzes, only lecture slides are required.

INSTRUCTOR & TAs

Role	Name	Email	Office Hour
Instructor	Jingwei Liu	jil209@ucsd.edu	Fridays 3-4 pm (extensible)
TA (Section A01)	Yifan Guo	yig020@ucsd.edu	Monday 6-7 pm
TA (Section A02)	Amir Norouz Nasser	anorouznasser@ucsd.edu	Wednesdays 11 am-12 pm

LEARNING OBJECTIVES

- Understand what is music, the functionality of music in the human evolutionary context, and the social importance and significance of music.
- Reflect on the processes of musical knowledge construction. Is it purely bottom-up auditory feature detection? How does the top-down processing play a role? How does the interaction with other people and the environment shape the music?

- Investigate musical expectations and aesthetics. What is musical expectation and why is it important? What happens when we meet the expectations and what if we violate them? What are the biological mechanisms behind the theories of expectation (and surprise)?
- Grasp some of the compositional techniques and musical analysis frameworks. Music is a creation by humans and a crystallization of human minds. What are composers thinking about when they write music? What do musical analysts contemplate when they analyze music?
- Realize the importance of musicking (the process of music making) and link the concept with embodiment, enactivism, active inference, and phenomenology. Understand that music is a sociocultural product created from human activities and study it through the reformed lens.

Course Format

Lecture mode: remote & asynchronous (except for guest lectures, see below). The lectures are pre-recorded and uploaded to Canvas. Students are free to complete the lectures and tasks in their own time during the week. A typical lecture is divided into two recordings, each of 15-30 minutes, to address different topics. There are usually 4 videos for a week (2 lectures).

Discussion section: There is NO synchronous discussion section with the TA. Please schedule an office hour with the TA for your section if you have any questions.

Guest Lectures: This course features two guest lectures. Students are required to attend guest lectures via Zoom in **real-time/synchronously**. The schedule for the guest lectures is

- Week 4 Thursday (August 28th) 3-4:50 pm
- Week 5 Thursday (September 4th) 2-4 pm

If the guest lectures turn out to be infeasible, the instructor will continue with recorded lectures as usual.

Grading Policy: The grade in this course is composed of lecture quizzes, weekly assignments, and the final paper project. There are no midterms/final exams in this course. The grade breakdown is as follows:

- **Lecture quizzes (40%):** There are 4 multiple-choice questions after each lecture (2 videos). Each question weighs 1 point and is graded by correctness (1 attempt only). The lecture quizzes are regarded as a substitute for the usual exams. You can start the quizzes anytime during the week (the quizzes are on a separate page, not embedded within the recordings). You are encouraged to open the quiz when you are fully prepared (revisit the lecture materials, finish the readings, etc.). Once you start the quiz, you need to finish it

in one shot (not to reload or reopen it). Each 4-question quiz page will be timed for one hour. For guest lectures, there will be no quiz. The 4 points will be assigned by your attendance. You are supposed to join the Zoom meeting on time and stay for the full length of the lecture to get the points.

- 4 points \times 10 lectures = 40 points
- **Weekly assignments (35%):** There will be 5 writing assignments in this course, due at the end of each week. Each assignment weighs 7 points, with a 250-300 word requirement.
 - 7 points \times 5 assignments = 35 points
- **Final Paper Project (25%):** The final project is to write a research paper on the topic of one of the in-class readings. 1500-2500 words. The submissions include:
 - **Project proposal (5 points).** Due at the end of Week 3. I will release the readings for weeks 4 & 5 in week 3, so that you have enough materials to choose from. The proposal aims to inform your TA about what you plan to work on and get confirmation/feedback from them. Your TA will grade your proposal within one week. Once you receive the feedback from your TA that confirms/revises your proposed topic, you can start working on your research paper.
 - **Final research paper (20 points).** The final paper is on the topic of your choice based on one of the in-class readings (paper or book). You are supposed to peruse the chosen reading and do basic research on the topic (from the references of the reading). You are supposed to write a paper expressing your understanding and reflections in your own words, drawing evidence from multiple readings. The use of AI is forbidden.
- **Bonus points (2 points):** Participating in Sona experiments (optional)
 - Sona website: <http://ucsd.sona-systems.com>
 - Detailed instructions for students:
<http://www.psychology.ucsd.edu/undergraduate-program/undergraduate-resources/sona/index.html>

YouTube Channel: <https://www.youtube.com/@MUS20ExploringMusicalMindUCSD>

- All lecture recordings and YouTube videos used in this course will be included in this channel. Please feel free to subscribe or recommend to others if you'd like to review the course in the future!

Course Schedule

Week & Lecture	Video Topic	Typical Readings (mostly optional)	Tasks (due Sunday of that week)
W1-1.1	Sound & Acoustics	Diana Deutsch Psychoacoustics Research	Writing Assignment 1
W1-1.2	Definitions of Music	World Music Chapter 1: What is Music?	Lecture quiz 1
W1-2.1	The Musical Human	The Musical Human: a history of life on Earth by Michael Spitzer	
W1-2.2	Music and Musicking	Musicking Prelude by Christopher Small	Lecture quiz 2
W2-3.1	Music and Evolution	The Nature of Music and Its Evolution	Writing Assignment 2
W2-3.2	The Origins of Music	The Nature of Music from a Biological Perspective	Lecture quiz 3
W2-4.1	Music and Language	A Generative Theory of Tonal Music by Fred Lerdahl and Ray Jackendoff	
W2-4.2	Generative Grammar	Context-Free Grammars and Constituency Parsing	Lecture quiz 4
W3-5.1	Schenkerian Analysis & Narrativity	Music As Narrative by Fred Everett Maus	Writing Assignment 3
W3-5.2	Emotion and Meaning in Music	Emotion and Meaning in Music by Leonard B. Meyer	Lecture quiz 5

W3-6.1	Music and the Psychology of Expectation	Sweet Anticipation- Music and the Psychology of Expectation by David Huron	Project proposal
W3-6.2	Surprise: Contrastive Valence	Sweet Anticipation: Chapter 2 Surprise	Lecture quiz 6
W4-7.1	Post-Tonal Music	Karlheinz Stockhausen's Kontakte and Narrativity	Writing Assignment 4
W4-7.2	Musical Embodiment and Enactivism	Embodied Mind, Situated Cognition, and Expressive Microtiming in African-American Music by Vijay Iyer	Lecture quiz 7
W4-8	Guest Lecture with composer/ performer	D.M.A. student Amir Norouz Nasser (Violin Performance) Ph.D. student Yifan Guo (Composition)	
W5-9.1	Cognitive Constraints on Music Perception	Cognitive Constraints on Compositional Systems by Fred Lerdahl	Writing Assignment 5
W5-9.2	Predictive Processing	Predictive Processes and the Peculiar Case of Music	Lecture quiz 9
W5-10	Guest Lecture in Music and Phenomenology	Ph.D. candidate Matthew Chung (Computer Music)	Final Paper