COM 321-02/HM Technology and Tactics of Sound: An Audio Workshop

Course Outline and Syllabus

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Office Hours: T/Th 1:15-2:15 pm W (by appt.)
Classroom: CULM 111
Term: Spring 2024

Course Format and Objectives

This class will meet on Tuesdays and Thursdays between 11:30 and 12:50am.

General Objectives

This course introduces sound and its manifold uses and functions in the digital era, thanks to ongoing advances in audio and information technologies. Beginning with a broad survey of various timely innovations in recording, production and distribution devices over the last century, the course will offer learners an effective primer on how science and art have worked together to develop sound as an important media form in an array of genres and formats. Complementing this aim, learners will be introduced to specific core concepts and terminologies in audio technology, including sample rates, bit depth, waveforms, hertz and frequency situated in relation to current principles of human audio perception.

Instructional Objectives

Such concepts will enable us to explore different techniques in audio recording, mixing, synthesis and design with an emphasis on contemporary digital modes of production. Towards the latter half of the course, we will develop these techniques further in combination with the fundamentals of programming (for example, logic, loops, functions, creative coding, etc.) to examine how advances in computational thinking have enhanced our respective abilities as artists, scientists, and engineers to use audio both to produce and to interpret information about the world around us. Throughout this course, learners will work with and even design new audio tools for a wide array of digital production environments, including Web-based media, soundscapes, art installations and videography. The final modules of the course will examine the relatively recent field of sonification or the use of audio technology to process and represent data. By studying this highly experimental range of audio technology theories and practices, learners will see more precisely how computers continue to transform some of our most basic ideas of what sound might be and the many ways it contributes to almost every field of knowledge.

Over the term, learners will not only study different historical and theoretical lineages informing the production and distribution of sound as a media technology over the last century, but also learn, assess, and apply hands-on techniques to produce creative sound works of their own.

Course Assessment: Exercises and Projects for Marks

Class/Online Work

Attendance/ Participation:	5 marks
Short Exercises (5 x 3 marks each)	15 marks
Course Portfolio	5 marks

Academic Writing and Research

Report 1: The Materiality of Sound	10 marks
Report 2: Sound and Technology	10 marks
Honors Research Paper	15 marks

Sound Composition Projects

- Sound Environments 10 marks
- Sound Arrangements 10 marks
- Sound Discoveries 10 marks

Final Composition Project

GenAI Multimodal Paper 10 marks

Detailed Description of Course Assignments

This course is designed and organized primarily as a workshop for the production and critical study of sound as both an art form and media modality using contemporary audio technologies.

Punctuality, Attendance and Participation:
Each class will offer learners the opportunity to engage simultaneously in both a workshop and seminar environment. The workshop portions of these classes allow learners to actively engage with and use sound production technologies. My pedagogy emphasizes a learner active approach to in-class assignments, where I hope *learners* lead discussions as often or even more often than me, the instructor. Annotated readings of relevant research on the topics being covered will be assigned on a weekly basis and will count toward participation. Learners are encouraged to introduce material and ideas they believe are relevant to the topic at hand. Learners are expected to attend every class.

Absences due to illness must be confirmed a *minimum* of **4 hours** before class by email to avoid penalty. In-class activities and general participation will account for **10 marks** and will be based on both the frequency, relevance, and general quality of the learner's comments, questions, and observations. More than **6 unexcused absences (3 weeks of the curriculum)** will result in automatic failure of the course; excessive unexcused lateness of **20 minutes** or more throughout the course will be considered as one absence. Learners who expect to miss classes or exams because of religious observance or athletic events must submit to their instructors a written list of dates that will be missed by the end of the second week of classes. Learners are expected to make up missed work.

- **If a class cannot be attended for any reason other than physical illness, I must be notified a minimum of one day before the class is scheduled to enable me to prepare alternative access to the same material.**
- **Extra time to complete all individual assignments must be petitioned in writing at least one week (7 days) before the assignment is due.**
- **Assignment drafts or requests for assignment-related advice must be scheduled 7-9 days before the assignment's due date if extra help is to be delivered in a timely fashion.**

Alternative submission access for late assignments and extra course material will be provided for each graded task; however, late assignments and missed classes that occur outside these guidelines will be penalized. Late assignments will be deducted 10 percent of the task's course value up to 1 week after the submission date. Late assignments will be deducted 20 percent of the task's course value from 8 days to 2 weeks after the submission date. Late assignments will be deducted 50 percent of the task's course value from 15 days to 4 weeks after the submission date. Assignments missing for more than 4 weeks will not be accepted. No late assignment will receive commentary supplementary to its graded evaluation.
Proper and accepted communication guidelines help minimize the risk of penalty in terms of grading as well as critical commentary. Compromising your access to resources, including the time you may need to complete each assignment, can be seriously incapacitating, preventing you from learning the actual skills and approaches required to understand the course material. This will remain a very serious risk throughout the term. Providing information as early as possible concerning any challenges you are facing this term will enable me to work with you more effectively and conceivably prevent the assigned work from overtaking your abilities. Losing access to the course material and my assistance strongly risks a withdrawal or a grade of F by the end of the term.

Learner success in this course demands consistent access and proper use of these electronic resources is the student's responsibility, as it is assumed that their general availability is constant, 24/7. If technical problems with the software or any specific interface occur during the course, it is up to the student to contact either the professor or one of the IT/Help resources associated with the website as quickly as possible.

Online Short Exercises and Learner Course Portfolio

Reader Response Learner Exercises
Due to the experimental and, at times, complex nature of much of the assigned composition work, various short writing exercises will be distributed at strategic points in the course to help learners taking the course at a general level organize and formulate relevant questions regarding their larger compositions and writing projects. These exercises will take the form of five summary analyses (300 words) to be completed online, usually in response to specific course readings or pre-selected topics of discussion. The exercises are designed to prompt critical reflection concerning their work while also providing core content and material resources to be used in the actual composition process. Learners taking the course at an honours level will substitute these summary analyses with a single research paper on current philosophies of listening and/or the aesthetics of noise.

Learner Portfolio
Copies of the sound compositions and all major writing assignments will be saved and uploaded to electronic portfolios designed and distributed by each student early in the course. Learners are also required to save all written assignments and drafts of their work for inclusion in this portfolio. The portfolio platform and format you use is open. At the end of the semester, the student and the instructor should meet to discuss the portfolio, taking note of the progress that has been achieved and the challenges that remain as the student moves forward to the next Humanities course. Each portfolio will be given a holistic score out of 5 based on the following criteria:

- Evidence of analytical and critical thinking.
- Evidence of university level skill in academic writing, including advanced revision and editing techniques.
- Evidence of creativity, innovation, and technical competency in the use of sound-based multimedia tools
- A familiarity and introductory competency with the fundamentals of coding and procedural thinking.
- A familiarity and overall fluency with electronic, multimodal writing environments (including social media/portfolio tools).

It's common for the Communication and Media program to schedule an additional review of a selected sample of learners' portfolios. The portfolios may be reviewed and commented upon by other instructors in the department. Such assessments will be considered formative and will not be included in any student's course or assignment grade.

Academic Writing

Research Reports
Two formal reports will be assigned early in the course to give learners the opportunity to observe, collect information first hand and then reflect on how sound media can be interpreted anew in terms of cultural discourses and audio reproduction technologies. Learners will be encouraged to explore sound as an inherently mutable, ever-evolving material artifact functioning in a wide array of different social environments. The first report will focus primarily on audio technologies that helped sound achieve a variety of material forms that could be listened to, experimented with, and even re-interpreted as different forms of art and knowledge. The second report will discuss sound and its development as digital media technology, exploring the ongoing development of different industry-oriented formats ranging from MIDI to even AI. The reports will be multimodal in format, integrating multiple media elements to achieve a successful investigation. Each report will also include a short original audio composition to exemplify some of the themes and issues being discussed.

Honors Research Paper
A single, documented research paper (MLA format) will be assigned at mid-term to students taking the course at the honors level. This project will allow these learners to engage in their own investigations and

analyses of specific themes and issues derived from contemporary philosophies and theories of listening. Throughout the course, numerous scholarly readings in the field of sound art, the aesthetics of noise and media theory in general will be distributed for class discussion, and the topics will be based on these readings and the further research you do. The research paper is designed to help learners acquire the skills and confidence to make their own contributions to this important area of research and critical examination. This paper will replace all Reader Response Discussion Exercises non-honors students are required to submit, though class discussion on the exercises will welcome their participation.

All written assignments should conform to the guidelines for presentation set out in the class. The evaluative papers should be submitted in accordance with the MLA style sheet as laid out in the most recent edition of the *MLA Handbook for Writers of Research Papers*. The correct use of sources and their documentation remain important factors in the grading schema.

Course Policy on the Use of AI Content Generators for all Writing Assignments

Writing practices are being drastically transformed by advances in Artificial Intelligence (AI). AI content generators (e.g. ChatGPT) are acceptable for use in this course if the following guidelines are followed:

- **AI-generated texts *cannot* be submitted as original work for assessment. However, AI content generators can be used for early drafts. Learners are expected to revise and submit an original draft for final assessment.**
- **Extra cover sheet with the following details must be submitted with your assignment, including:**
  1. **name of AI content generator used**
  2. **date used**
  3. **prompt or prompts submitted to the AI content generator**
  4. **The full AI version of draft with the final document the student has revised and written for assessment**

Learners not in full compliance with this policy will receive an automatic F.

Digital Audio Projects (DAP)
Learners will be given the opportunity to produce three sound compositions in the form of "digital audio projects" or DAPs. Each project will centre upon a distinct theme or point of interrogation while introducing the learner to different composition skills and techniques used in digital audio production.

- **DAP 1** will investigate issues and ideas associated with sound as an experiential, spatial environment or "soundscape," asking learners to build and/or reference a distinct physical location as an audio arrangement. Mobile recording equipment like a phone or digital recorder will used to acquire content evocative of a specific locus. The material will then be edited and augmented using simple digital studio tools.
- **DAP 2** will introduce learners to basic techniques in digital audio production using Ableton Live 10 software. For this assignment, learners will continue working with various field recordings archived for DAP 1 and explore different ways to arrange them with supplementary samples, mixing tools, and audio effects to produce original compositions.
- **DAP 3** will take many of the basic skills learned in the previous project a few steps further by applying more current MIDI recording technologies and sound sampling. MIDI allows learners to use increasingly granular, sophisticated digitization techniques based in the complete synthesis of sound as digital information. At the same time, learners will be presented with contemporary issues exploring how computation and programming continue to shape sound composition in the 21st century. Experiments in digital modulation, filtering, programming, and soundwave construction will provide an array of new devices for building new and original sound pieces.

Learners will be given two to three weeks to complete these assignments using resources listed here on the outline. All compositions will be stored on the course Canvas site and displayed on the course Canvas site.

Final Multimodal Project on GenAI
Learners will complete the course by submitting individual multimodal projects designed to explore the emerging technologies and fields of practice in sound technology recently developed through new Generative AI tools and studio platforms. Consistent with these practices, each project will be multimedia in format, combining visual and aural elements along with written research. As the course has sought to demonstrate, new visual and audio technologies have brought a rich array of experiments in composition and production techniques, genres, and even socio-cultural ideas for over 100 years. Digital modes have allowed both science and culture to explore entirely new realms of human experience in remarkably innovative and detailed manners. GenAI is no different, broadly speaking, but its highly distinct effect on the user interface may prove to be more revolutionary than even the information-based approaches to sound initiated by digital tools. Together, these information tools provide a visually and aurally robust mode of interacting with and learning about our environments. This final assignment will ask learners to compose an original sonic-information work from data they will collect both visually and sonically via digital representation technologies. The information subsequently presented will demonstrate a specific exploratory thesis on a topic or issue of the student's choice.

Learners will begin their respective projects shortly after spring break and be given **four** weeks to complete the assignment. Project workshops will be provided during class between **weeks 12 and 15** of the course. Project drafts will be showcased over the last two weeks of class before the final project is due at the end of **week 15**.

Required Texts:

Selected Essays published on Canvas
Ableton Live Version 12 (education version)

Student Outcomes

Upon successful completion of these activities, learners will be able to:

- Engage in critical thinking and reflection pertaining to the cultural history of sound, sonification and aural/sound-based media technologies.
- Gain a practice-based introduction to digital sound production and distribution tools.
- Gain a practice-based introduction to various associated methods for composing sound projects in digital or electronic media.
- Understand the fundamentals of several common web and script-based programming codes, while gaining an introductory competency in their use to produce digital sound media.
- Refine their working knowledge of traditional as well as more recently developed techniques and tools for planning, organising, and drafting academic arguments in multimodal formats.
- Refine techniques for working collectively in groups on planning, drafting, reviewing and revising multiple versions of a single media project

Course Rubric

A = 90-100	**B+** = 87-89	**B** = 80-86	**C+** = 77-79	**C** = 70-76	**D** = 60-69	**F** = 0 – 59

Exam Dates and Policies: No exam is scheduled for this course.

Course Prerequisites: Successful completion of HSS 101 and HSS 102

Course Syllabus

Time	Topics/Readings	Assignments
Week 1 **16/18 January**	**Course Introduction** • **Learner Introductions** • **Course Themes and Tools** **Online Readings – Available on Canvas site** Pierre Schaeffer, "Acousmatics."	**Attendance** **Class Introductions** **Reader Response Short Exercise 1: Listening to Sound behind the Iron Curtain – 3 marks Due Thursday, January 25**
Week 2 **23/25 January**	**Sound Cultures: Sound and How we Experience it** **Building a Sound Culture: Music, Emotion, Language and Soundscapes** **Online Readings – Available on Canvas site** Francesco Lopez, "Profound Listening and Environmental Sound Matter."	**Report 1: The Materiality of Sound (10 marks)** **Due February 15**
Week 3 **30/1 February**	**Signals and Transmissions:** **A History of Recording and Sound Technologies** **Roundtable Discussions: New Audio Recording Technologies** • Physical Modelling and Sound Synthesis • Aesthetics and Sound Technology I: Recording and Broadcasting	**Digital Audio Project #1: Exploring Sound Environments (10 marks)** **Due February 22**
Week 4 **6/8 February**	**Roundtable Discussions: New Industries and Markets of Sound** • From Radioactivity to Radios • Marketing Sound: Sheet Music, Broadway, and Broadcasts **Online Readings – Available on Canvas site** Luigi Russolo, "The Art of Noises: Futurist Manifesto" Morton Feldman, "Sound, Noise, Varèse, Boulez"	**Reader Response Short Exercise 2: Advances in Recording Technology – 3 marks Due next week** **Digital Audio Project #1 Workshop**
Week 5 **13/15 February**	**Noise, Signals, and Silence:** **Constructing a Philosophy of Listening** **Roundtable Discussions: Modes of Listening** • Noise and Ambiguity: Aesthetics of Sound/Sound Art • Silence as Media	**Report 1 Due** **Digital Audio Project #1 Workshop**
Week 6 **20/22 February**	**Computation and Sound: Aural Information** **Roundtable Discussions: Measuring Listening Experience** • Computation and Sound • Aesthetics, HipHop, the Break and the Art of DJing	**Digital Audio Project #1 Due** **Report 2: On Sound as Technology - 10 marks** **Due March 7**
Week 7 **27/29 February**	**Digital Audio Workshops: Introduction to Ableton live** • History of MIDI • Sound Production Tutorial with Ableton Live **Online Readings – Available on Canvas site** Salomé Voegelin, Selected Readings from *Listening to Noise and Silence* (Continuum, 2010). S. Helmreich, "Gravity's Reverb: Listening to Space-Time or Articulating the Sounds of Gravitational-Wave Detection.	**Reader Response Short Exercise 3: Listening vs. Hearing – 3 marks** **Due next week** **Research Paper** **Topics Given** **(10 marks)** **Due March 29** **Digital Audio Project #2: Building Sound Arrangements** **(10 marks)** **Due March 21**

Week 8 **5/7 March**	**Computational Sound:** **Designing and Composing for Digital Culture** **Sound and Synthesis: Audio Recording in the Digital Age** **Roundtable Discussion: Algorithmic Compositions** • Stochastic Composition and Randomness • Tools for Machine Musicianship • The Art of Feedback **Digital Audio Workstations and Production Techniques** • Synthesis and transformation of sound by computer **Digital Audio Workshop: Introduction to MIDI Software** • Mixing MIDI and Audio with Ableton Live	**DAP# 2 Workshop** **Reader Response Short Exercise due**
Week 9 **12/14 March**	**Spring Recess (10-17 March)**	
Week 10 **19/21 March**	**Sound and Space: Contemporary Sonic and Conceptual Topologies** **Computation and Composition** • Electroacoustic Sound and Technology • From Auto-Tune to AI: Artificial Intelligence in Sound Composition and Art **Roundtable Discussion: Emerging AI and Sound Composition Technologies** **Online Readings – Available on Canvas site** B. Truax, "Soundscape Composition as Global Music: Electroacoustic music as soundscape" S. Reynolds, "How Auto-Tune Revolutionized the Sound of Popular Music"	**Exercise 4: Were Humans Ever Necessary? – 3 marks Due next week** **Digital Audio Project #2 Due**
Week 11 **27/29 March**	**Gen-AI: Sound Production and Artificial Intelligence** **Roundtable Discussion: Possible Worlds Theory** • Design, Sensuous Perception, and sound • Using AI and Sound for Health Purposes: W.H.I.M Therapy/ASMR/Frequency Healing • Sonic Frequency Tools, Interactive Impressionism, and the Mind	**Digital Audio Project #3: Making Sound Discoveries (10 marks) Due April 11** **Research Paper Due** **Reader Response Short Exercise Due**
Week 12 **2/4 April**	**Digital Audio Workshop: Introduction to Final Project** • Project Planning • Producing a Multimodal Project • Using Gen-AI in Sound Composition **Roundtable Discussion: Future Directions: New Interfaces for Musical Expression**	**Final Research Project: Gen-AI Multimodal Composition (10 marks) Due April 27** **DAP Workshop**
Week 13 **9/11 April**	• Sonification: Sound and Meaning and Auditory Data Display • Live Coding/Performance **Online Readings – Available on Canva site** S. Voegelin, "Sonic Possible Worlds" J. Schwartz et al.," Quantum Physics in Neuroscience and Psychology: a Neurophysical Model of Mind/Brain Interaction"	**Reader Response Short Exercise 5: Sound Knowledge – Imagining Tomorrow's Audio Technologies – 3 marks** **Digital Audio Project #3 Due**
Weeks 14/15 **16-25 April**	**The Sounds of Things to Come – New Materialisms/New Experiences** **Roundtable Discussion**: Evolution of Human Interactivity and Communication **Online Readings – Available on Canvas site** D. Byrne, "How architecture helped music evolve"	**Reader Response Short Exercise Due April 18** **Gen-AI Workshop/Gen-AI Showcases** **Projects Due April 27**