Foundations of Sound and Music

FALL 2024
Digital Design 303
Monday and Thursday 10:00 AM–11:20 AM
Room: West 210
3 Credits

Instructor Contact Information
Dr. Alexander Liebermann
The Juilliard School MAP Faculty
NJIT Adjunct Instructor
Email: alexander.liebermann@njit.edu

Course Syllabus

Course Description:

This course offers a comprehensive exploration of foundational aspects of music, encompassing acoustics, music history, music notation, music theory, music philosophy, and extends to the realm of sound design for motion pictures. The curriculum encompasses the interpretation and analysis of scores that range from solo piano to full orchestral compositions, and a comprehensive survey of music composition and orchestrations to provide the students with the necessary skills to gain a deeper understanding of the musical pieces studied in class. Additionally, the course also offers an in-depth survey of music terminology and instruments, equipping students with the essential vocabulary for effective engagement with AI applications. Finally, students will approach music through a philosophical lens, delving into thought-provoking inquiries such as “What defines music?”, “Why do we make music?”, and “Does every sound have the potential to be considered music?” These fundamental questions will be thoroughly examined and debated within the course.

Textbooks:

There is no required textbook for this course. Therefore, students are expected to take notes during class. All assignments and exams will be grounded in the content covered during classes. The readings for this course will be published on the course Canvas website.

Requirements:

Paper or tablet for note-taking as well as staff paper for musical notation.

Course Objectives:

The primary objective of the Foundations of Sound and Music course is to provide students with a comprehensive understanding of the essential components of music (acoustics, notation, music theory, instruments, etc.) This will empower students not only to articulate their insights about diverse musical works and genres using appropriate musical terminology but also equips them to supply AI machines with the precise vocabulary needed for effective communication. Students will also be able to uncover intriguing connections between apparently dissimilar musical genres, enabling them to discern parallels between works such as Beethoven’s Fifth Symphony and the soundtrack of Star Wars. The philosophical approach of this course, which consists of questioning definitions, genres, and music itself, helps students develop a critical understanding of music and the world.

Grading & Assessment:

Grading scale (in percentage)
90 = A Superb, **85** = B+ Excellent, **80** = B Very Good, **75** = C+ Good , **70** = C Average **60** = D Minimal Below **60** = F.

- Assignments: 40%
- Quizzes: 20%
- Presentation: 20%
- Class Participation: 20%

Additional Class Information:

The use of tablets or computers for purposes other than note-taking during class is strictly prohibited. All cell phones must be kept out of sight and turned off for the entire duration of the class period. Unauthorized recording (film/audio) or photography during the class will lead to automatic failure of the course.

1. Course Schedule

TH 9/5	1	Course Introduction Exploring the Basics of Music Philosophy
M 9/9	2	Exploring Acoustics: Unveiling the Nature of Sound
TH 9/12	3	Tracing the Origins of Music How Does Music Affect Your Brain (12 min.) How Music Works: Melody (50 min.)
M 9/16	4	Oral and Written Musical Traditions Decoding Music Notation: Mechanics and Historical Evolution How to Read Music (6 min.) A Brief History Of Western Music Notation (5 min.)
TH 9/19	5	Pitch Elements: Mathematical Correspondences on the Keyboard Different Systems for Music Notation and Diverse Tuning Systems Can You Tell These Notes Apart? (11 min.)
M 9/23	6	**Quiz 1: Acoustics (Multiple Choice)** The Art of Musical Layering: Textures What is Texture? (8 min.) Textures (4 min.)
TH 9/26	7	Rhythm and Beyond: Time in Music How Music Works: Rhythm (50 min.)

		How to Count Basic Rhythms (9 min.)
M 9/30	8	Parameters of Music: From Pitch to Timbre
TH 10/3	9	**Assignment 1: Essays (In-Class)**
M 10/7	10	Music Theory Essentials I: Staff, Notes, Intervals How Intervals Work (7 min.) Famous Songs and Their Intervals
TH 10/10	11	Music Theory Essentials II: Triads and Chords How Music Works: Harmony (50 min.)
M 10/14	12	**Quiz 2: Music Theory Essentials (Multiple Choice)** Woodwind Instruments: Orchestra and Beyond Philharmonia Orchestra: Flute, Oboe, Clarinet, Bassoon (40 min.) Didgeridoo - Jeremy Donovan (2 min.) Hulusi - chinese cucurbit flute (2 min.)
TH 10/17	13	Brass Instruments: Orchestra and Beyond Philharmonia Orchestra: Horn, Trumpet, Trombone, Tuba (40 min.) Iron Age Celtic Horn (2 min.)
M 10/21	14	Percussion Instruments: Orchestra and Beyond Philharmonia Orchestra: Timpani (8 min.) Philharmonia Orchestra: Percussion (17 min.) World Percussion Instruments
TH 10/24	15	String Instruments: Orchestra and Beyond Philharmonia Orchestra: Violin, Viola, Cello, Double Bass (40 min.) The Orchestral String Section: An Introduction (20 min.) World String Instruments
M 10/28	16	**Quiz 3: Music Instruments (Multiple Choice)** Mastering Score Reading: From Solo Piano to Orchestra How To Read Music Scores - Music Theory Crash Course (5 min.)
TH 10/31	17	**Assignment 2: Music Description (In-Class)** The Significance of the Bass How Music Works: Bass (50 min.)
M 11/4	18	Structures in Sound: Exploring the Architecture of Music What is Sonata Form? (6 min.)
TH 11/7	19	Why is Beethoven so Famous? Beethoven's Genius Explained (4 min.)
M 11/11	20	Interpretation and the Art of Attentive Listening

		7 Ways to Create a Musical Interpretation (20 min.)
TH 11/14	21	**Assignment 3: Music Criticism (In-Class)**
M 11/18	22	Exploring Film Music: An Introductory Journey Temp Tracks, Similarities, and the Significance of Classical Knowledge John Williams
TH 11/21	23	How to Imitate the Hollywood Sound How to Imitate a Whole Lot of Hollywood Film Music (11 min.)
M 11/25	24	The Role of Silence Martin Scorsese - The Art of Silence (6 min.) Psycho (1960) - 'The Bathroom' (4 min.) John Cage About Silence (5 min.)
TH 11/28	25	Thanksgiving Recess. No Classes
M 12/2	26	Essential Jargon to Communicate with AI
TH 12/5	27	**Presentation (Part 1)**
M 12/9	28	**Presentation (Part 2)**

2. Course Assignments

Assignment 1:

Compose two concise essays (by hand) during the in-class session, selecting from a pool of three topics that correspond with the subjects we've explored in class. These topics encompass Acoustics, the Origins of Music, the Evolution of Oral and Written Traditions, the History of Music Notation, the Rhythmic Foundations, the Exploration of Musical Textures and Parameters.

Assignment 2:

This assignment, to be completed in-class and by hand, will involve listening to a range of musical compositions. Your task is to keenly identify and articulate what you hear, employing the appropriate musical terminology and vocabulary.

Assignment 3:

For this in-class, handwritten assignment, you will have listen to three or more interpretations of the same musical pieces. Your task is to employ the appropriate musical vocabulary and terminology to provide a descriptive analysis of what you hear.

Presentations:

During the final in-class presentations, you will share an artist you admire and give a description of one of their songs, utilizing the music vocabulary and concepts we've covered in class. Each presentation should last for 5 minutes individually or 10 minutes when presented by a pair.

3. Course Administration

A. Copyright, Rights, Publication, Plagiarism:

All student work, both digital and physical, may be retained by the New Jersey School of Architecture, HCAD, NJIT for various purposes including accreditation, academic reference, design competitions, conferences, research papers, institute publications, public exhibitions, and online publicity.

NJSoA/HCAD/NJIT reserves the right to retain copies of all academic material created by students in relation to their coursework and research.

Access to the educational and reference materials provided is restricted solely to students enrolled in this specific course. This encompasses, but is not limited to, videos, music, sound files, books, e-book links, journal and magazine articles, online images, and links to other publications and tutorials from any source. Students must adhere to all intellectual property laws.

Academic materials and references must not be shared, transmitted, or made accessible to third parties, nor should they be used beyond the scope of the course assignments. All materials, including images, videos, recordings, and live presentations associated with this course, must not be screen captured or publicly shared in any way.

All educational and reference materials should be completely deleted from all storage devices before the end of the semester.

Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.

By registering or participating in any capacity in this course, you implicitly agree to comply with all the aforementioned requirements.

B. Resources:

Names and links to freeware will be available on the Canvas course site. However, below is a compilation of the most valuable freeware resources. These tools are intended to significantly enhance the learning of course material and provide essential assistance for completing course assignments.

Music Notation:

Musescore	https://musescore.org/en
Noteflight	https://www.noteflight.com/
Soundslice	https://www.soundslice.com/homepage/
Music Animation Machine	https://www.musanim.com/

Sound Editing

Audacity	https://www.audacityteam.org/
AudioMass (online)	https://audiomass.co/

Music Theory:

Musictheory.net	https://www.musictheory.net/lessons
Theory Tools	https://muted.io/
Teoria.com	https://www.teoria.com/en/tutorials/
Chrome Experiments	https://musiclab.chromeexperiments.com/Experiments

AI Tools:

MusicGen	https://huggingface.co/spaces/facebook/MusicGen

C. Statement on Academic Integrity:

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

D. Statement on Generative AI

This class will not permit the use of generative AI tools, including Chat GPT, Gemini, and similar platforms. All assignments and quizzes will be handwritten and completed in class.

The instructor reserves the right to make reasonable changes to the syllabus.