MUAE 3100–003– Fundamentals to Digital Audio Workstation Techniques

Syllabus – Spring 2026

Go to Schedule

Meets on: T/Th 12:30PM-1:50PM
Instructor/Email: Austin Martinez - austin.martinez@unt.edu
Office hours: By appointment M/W 11:00AM-12:00PM

Music Computer Lab and Studio MUSI 252
Virtual Computer Lab:
MyLab virtual computer lab connection guide
Audio Streaming

Course Description:

The use of computers for music-making is a revolution in the sonic landscape that has dramatically changed music. Digital techniques have not only embraced the achievements analogue technology had claimed — e.g. recording and playing back sounds, sampling, synthesis, effects, etc. — albeit with arguably different sound qualities. They have also opened a myriad of new possibilities for sound manipulation (e.g. granular synthesis) and composition (algorithmic and probabilistic approaches); as well as acted as a unifying playground where several media can coalesce and be integrated with unprecedented streamlined procedures.

But technology *per se* is *naive* and underwhelming. Therefore, aesthetic judgment plays a fundamental role. During this course, the development of an artistic personality will be supported by critical listening and discussion of music selected by the instructor and the students.

This course will cover basic techniques for producing music with computers by addressing making sounds “in the box” using built-in software (using Ableton Live and Logic Pro) as well as recording audio and post-production (using Pro Tools). These skills are learned through study and analysis but also through work on projects. To address this requirement, students will be required to handle a constant flow of hands-on practice through fulfillment of bi-weekly assignments.

Course Learning Outcomes:

Students will:

- Familiarize themselves with basic notions of music production and apply them for the creation of original music and for groups and class discussions using acquired terminology
- Learn digital audio editing and mixing techniques and apply them for various recording and mixing projects.
- Devise and record custom samples based on their own creative ideas
- Create a variety of rhythmic patterns (also known as, beats) for sampled drums and other percussive sounds

- Aurally identify recording, post-production, mixing techniques and electronic music techniques.
- Create their own sounds from scratch by exploring concepts of sound synthesis and sample manipulation
- Develop an aesthetic judgment to choose from and apply several music production, recording and mixing techniques learned
- Collaborate with other musicians in open-ended assignments toward the composition of original music
- Articulate constructive criticism on the work of their classmates and receive feedback from others on their own work.

Course requirements:

A 3-credit course means a nine-hour commitment. Three of those hours we will spend in class. This means you should be prepared to spend up to 6 weekly hours outside of class working on assignments and going over material.
Electronic devices are not permitted during lectures, unless explicitly allowed by the instructor. Browsing the internet or social media will not only make you lose your focus; it will also harm your grade.

Assignments, Asynchronous learning and Class Posts:

Student work for this course consists of:
3 Assignments, broken-up into 9 assignment submissions
Asynchronous learning tasks
Class Posts

Evaluation:

Assignments 60
Assignments are graded for completeness, technical ability (using techniques described in lecture) and creativity
Asynchronous learning 20
May include music listening, learning modules or preparation for a class meeting. Assessed for completeness and critical thinking. Lowest three grades will be dropped before averaging. Asynchronous items become unavailable after their deadline.
Class posts 10
Posts or activities assigned (and often completed) during class time, assessed for exploratory spirit and technical execution. Lowest three grades will be dropped before averaging. Class posts become unavailable at midnight of the day they are assigned.

Attendance, participation & professionalism 10
Always come to class, be active & make questions. We will be going to the Computer Lab Recording Studio a few times during the semester. A strong sense for organization and respect for the equipment is a must in any recording studio. Working collaboratively to keep the space alive but organized is a sign of professionalism.

Policies:

Participation and attendance:

Do not use computers, phones, or other electronic devices for non class-related activities (social media, shopping, work for other classes, etc.) during class meetings.

More than 2 absences will affect your participation grade.

Late work:

Late work will be accepted at 50% only until one week after the deadline.

OneDrive:

This class will have a OneDrive folder. Each student will create their own subfolder where all their work should be uploaded. An organized OneDrive folder is essential for a successful completion of the course. More details will be given by the instructor.

Communication and submissions:

All assignment submissions must have at least these two elements:

- an .mp3 file posted on the corresponding Canvas discussion
- all files pertaining to that project in the corresponding OneDrive subfolder.

Materials:

- We will use Laptops with headphones, with the necessary software that are provided by the College of Music — feel free to bring you own
- For work outside of class time, use the Computer Lab

Schedule:

I. Basics of Digital Audio Workstations

Tuesday, January 13th – meeting 1
Introduction to the course

Introduction to the course and instructor. Why learn DAW's?

Basics of Digital Audio Workstations — Ableton demo

Topics:

Introduction to Ableton Live. DAW flow (tracks and Master). Faders. Windows / views, tracks, tools. Tracks at a glance. MIDI, Audio, Instrument. Audio loops. Basic selecting & Zooming Audio Tracks. Selecting area to export. Exporting audio (mp3 and wav / aiff options).

Tuesday, January 20th – meeting 2
Basics of Digital Audio Workstations — Logic demo

Introduction to Logic Pro. DAW flow (tracks and Master). Faders. Windows / views, tracks, tools. Tracks at a glance. MIDI, Audio, Instrument. Audio loops. Basic selecting & Zooming Audio Tracks. Selecting area to export. Exporting audio (mp3 and wav / aiff options).
Basics of DAW's

Digital audio basics. Audio recording & settings.

Project Session Settings, Sample Rate, Buffer Size. Basic recording with laptop buit-in mic. Basic I/O. Using different Buffer Sizes for recording and mixing.
Digital audio basics. Audio recording & settings.

Thursday, January 22nd – meeting 3
Project structure, file management and cloud

File types. Session / Project files. Folder structure. Logic: folder vs package. Creating New Projects, Finding files
Saving: Save vs. export. Backing-up, saving older versions. Using a cloud service: OneDrive. Sharing projects.
Importing stems. Checking that stems are not Warped / Flexed.

Project structure & file management (slides)
File management and cloud (doc)

Resources

AFFORDABLE SOFTWARE FOR PRODUCERS AND MUSICIANS
Mike Senior's Multi-track library
How to share projects – further reading re: Ableton Live folder structure
Ableton's article: Saving projects

II. Time and beats

Tuesday, January 27th – meeting 4
Intro to MIDI and drum beats

Pulse, meter, Beat division and quantization.
MIDI, Grids. MIDI Overdub.
Four on the floor & basic patterns.
MIDI, Grids, Beat division and Quantization

Classic drum patterns

Son Clave. Variations of Rock and Soul / Funk patterns.
Contemporary Hip Hop Drum beat (Kendrick Lamar "Alright")

Thursday, January 29th – meeting 5
Deviating from the grid

Music: L-Gante: Bzrp Music Sessions, Vol 38
Feel & Grooves. Ableton's groove pool.
Extracting groove patterns from audio.

Sequencers

Drum sequencers. The Mono Sequencer. Using sequencers for: melody, harmony, drums. Chance and Probability. Recording the MIDI output of an improvisation with sequencers. Drums sound design.
Drum machines, sequencers and samplers

Resources

Melvin Bliss - Synthetic Substitution (Drum Break - Loop) - sampled in Public Enemy's "Don't Believe the Hype"
Principles of Basic Drum Beats for Rock, Part 1
The Ultimate Guide To Soul And Funk Drumming
22 Essential Soul Beats For Drummers - DRUM! Magazine

Using Grooves and the Groove pool in Ableton.
Step by step instructions

Eric Harland: Playing behind/on/ahead of the beat

III. Synthesis

Tuesday, February 3rd – meeting 6
Acoustics and Intro to Subtractive Synthesis

Intro to Acoustics. Timbre and the harmonic series. Introduction to Subtractive Synthesis. Automating the filter.
Introduction to Acoustics & Synthesis lecture
Filters and automation

Thursday, February 5th – meeting 7
Oscillators, Envelopes and Modulation

Modulation with envelopes and LFO's. Pitch, filter cutoff and pulse-width modulation.
Creating a synthesized kick drum from scratch.

Exploring synthesized sounds

Exploring iconic synthesizer patches.

Tuesday, February 10th– meeting 8
Re-making a 2010's hit

Re-making Taylor Swift's "Don't blame me" synths. And how to sample anything from your laptop using Blackhole and multi-output.

Thursday, February 12th – meeting 9
Other types of synthesis

Resources

An Overview Of Logic Pro X's Powerful Synths
VCV Rack – learn modular synthesis with free software

What is Wavetable synthesis?
Wavetable Synthesizer Manual
Wavetable Synthesizer
Ableton tutorials on Wavetable: overview, modulation matrix, unison, oscillator effects
Creating a Wavetable synthesizer sound from scratch

Granular Synthesis:
What are the basics of granular synthesis? 3 articles: Sound on Sound, Wikipedia, Soundfly, Granulator II
Virtual Audio Cable (VAC)

IV. Sampling

Tuesday, February 17th – meeting 10
The cultural impact of breakbeats. Ethics of sampling.

Breakbeats and Sampling and their lasting impact on popular music.
Ethics of sampling. Genealogy of samples. WhoSampled.
The cultural impact of breakbeats ???

Thursday, February 19th – meeting 11
Chopping (aka slicing) samples

Basics of a Sampler Instrument. Modes: transposing, slicing, one-shot. Built-in filters. Slicing samples to create a drum beat.

Tuesday, February 24th – meeting 12
Diggin' the crates

Warp modes, transposition. Aesthetics of sampling vocals and other instruments.

Thursday, February 26th – meeting 13
Making a beat with everyday sounds

Sampling everyday sounds
Creating a percussive beat with everyday sounds

Resources

Alan Lomax, his field recordings
Sources for samples:
Vocal Downloads, Sample Swap, Cymatics, Beat Academy
Two methods for slicing samples
More Simpler techniques
Sampling: fair use, rights of use.

Legal issues surrounding sampling in music
Drake's lawsuit
How Music Copyright Works: Sampling, Covers, Mixtapes & Fair Use
When You Need Permission to Sample Others' Music, from Nolo, a leal firm
A Tribe Called Quest say Lou Reed got all the money from ‘Can I Kick It?’

V. Effects (aka Signal Processing)

Tuesday, March 3rd – meeting 14
Equalizers

Parameters of EQ. Relationship with filter. Demo of class activity. Intro to EQ's.
Introduction to Equalizers

Thursday, March 5th – meeting 15
Delays

Parameters of delays. Slapback delay and other iconic delay usages. Experimental uses of delays.
Introductions to Delays

Tuesday, March 17th – meeting 16
Reverbs

Intro to reverb parameters and uses of reverb.
Introduction to Reverbs

Thursday, March 19th – meeting 17
Creative FX’s. Dub & the mixer as an instrument

Creative combination of effects. Parallel and serial processing. Effect racks. Effect morphing. Multi-band effects. Creating a Wet / Dry.

Tuesday, March 24th – meeting 18
Listening party

Mandatory attendance

Resources

- compare The Serial Loop and The Parallel loop, also here.
Creating a Wet / Dry with an Audio Rack effect. — how to wet/dry anything in Ableton – saving this as a Template
Using zones to morph between effects – how to create a morphing multi FX
Using Multi-band Effects Processing – Kadenze's course Sound Production in Ableton Live for Musicans and Artists
Meeting 8, number 8

VI. Introduction to Post-production and Mixing

Thursday, March 26th – meeting 19
Introduction to Mixing

Mixing. Introduction to Audio Engineering & mixing. Listening tests. Listening and critique (A/B listening). Mix overview and Groundwork.
Lecture: Mixing
Hearing test online, Loudness, Decibels, loudness, phones and sones

Tuesday, March 31st — meeting 20
Mixing – balance, panorama & frequency
Mixing – dimension

Resources

Mixing: Frequency + "Fraglie Thoughts" mix comparison. Worksheet.
Mixing: Frequency. Worksheet. based on Owsinski, Bobby. "The Mixing Engineer's Handbook"
Sound Gym
The Ear Training Guide for Audio Producers – NPR

VII. Recording

Thursday, April 2nd – meeting 21
Recording Hardware

Audio interfaces, Mics, types of signal and cables.
Audio Interfaces, Microphones and mic techniques

Approaches & Techniques + Pre-production

Discussion: approaches to recording: live recording vs. multi-tracking (overdubbing).
Recording techniques for various sources and instruments, Recording vocals
Setting up recording in DAW, Recording session planning, I/O, Sends / Returns, Musicians mixes

Tuesday, April 7th – meeting 22
Listening and feedback (Ass 7a – demo)

Comping

Comping

Resources

Comparison of different microphone positions for orchestra instruments
How To Record Drums For 5 Genres

VI. (continued) Mixing

Thursday, April 9th – meeting 23
Mixing – Compression

Listening to Compression. Extreme example: a long guitar note. Phat snare. Parameters and typical applications.
Theory and parameters.
Drawbacks: the Loudness War
Listening and feedback

Tuesday, April 14th– meeting 24
Mixing – Bussing for submixes and focal points

The importance of sub-groups (aka buses) in mixing. Using volume and compression automation to create focus.

Introduction to Mastering

Introduction to Mastering.
Why Master? Reference listening. Opening exports in Audacity.

Resources:

When to use different Compressor Types?
Mastering 2-Bus Compression To Improve Your Mixes | Production Expert

VIII. Final Project

Thursday, April 16th – meeting 25
Tuesday, April 21st – meeting 26
Thursday, April 23rd – meeting 27

Tuesday, April 28th – meeting 28
Mixes: discussion & feedback
Mandatory individual consultation

Thursday, April 30th - meeting 29
Listening party
Mandatory attendance.

Bibliography:

Ballou, Glen. “Handbook for Sound Engineers” -> available through ILL only
Davis, Gary and Jones, Ralph. “Yamaha Sound Reinforcement Handbook”
Huber, David Miles. “Modern Recording Techniques” -> currently being requested by UC Merced library
Lewisohn, Mark and McCartney, Paul. ”The Complete Beatles Recording Session”
Massey, Howard. “Behind the Glass: Top Record Producers Tell How They Craft the Hits”
Owsinski, Bobby. “The Mixing Engineer’s Handbook”
Owsinski, Bobby. “The Recording Engineer’s Handbook”
Roads, Curtis. “The Computer Music Tutorial” -> will be on reserve soon.
Schmidt Horning, Susan. “Chasing Sound : Technology, Culture, and the Art of Studio Recording from Edison to the LP”
Self, Douglas. “Audio Engineering Know It All”
Senior, Mike. “Mixing Secrets for the Small Studio”

Online resources:

Bobby Owsinski’s blog
Circles Sines and Signals - Introduction
(Artificial) Space Is the Place: A Reverb Technology Primer – Flypaper

Scope:

All Commercial Music Majors.

Overview:

To foster a professional culture, students are required to attend area events and maintain up-to-date academic plans. Completion of these responsibilities accounts for **one full letter grade** across all MUCO and MUAE coursework.

Mandatory attendance events:

Attendance is tracked via a **QR Code**. Students are responsible for monitoring the Commercial Music Microsoft Teams channel for the most current schedule updates.

Event	Date	Time	Location
CM Showcase	Tue, Jan 27	9:00 PM	The Syndicate
CM Showcase	Mon, Mar 30	8:00 PM	Lab West
Zebras	Tue, Apr 21	8:00 PM	Lab West
CM Departmental	bi-weekly (odd weeks)	12:30–1:20 PM	MEIT (MU1001)

Academic Planning

Following an announcement by CM faculty/TA, students must update their academic plans every semester. Instructions and deadlines will be provided once available via Teams and during Departmental meetings.

Excused Absences

Standard UNT excused absence policies (e.g., medical emergency with documentation, official university travel) apply. All documentation must be submitted to the **Commercial Music TA** within 24 hours of absence.

ACADEMIC INTEGRITY
Students caught cheating or plagiarizing will receive a "0" for that particular assignment or exam [or specify alternative sanction, such as course failure]. Additionally, the incident will be reported to the Dean of Students (Office of Academic Integrity), who may impose further penalty. According to the UNT catalog, the term “cheating" includes, but is not limited to: a. use of any unauthorized assistance in taking quizzes, tests, or examinations; b. dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; c. the acquisition, without permission, of tests or other academic material belonging to a faculty or staff member of the university; d. dual submission of a paper or project, or resubmission of a paper or project to a different class without express permission from the instructor(s); or e. any other act designed to give a student an unfair advantage. The term “plagiarism” includes, but is not limited to: a. the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment; and b. the knowing or negligent unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.
See: Academic Integrity
LINK: https://policy.unt.edu/policy/06-003

STUDENT BEHAVIOR
Student behavior that interferes with an instructor’s ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The university's expectations for student conduct apply to all instructional forums, including university and electronic classrooms, labs, discussion groups, field trips, etc.
See: Student Code of Conduct
Link: https://deanofstudents.unt.edu/conduct

ACCESS TO INFORMATION – EAGLE CONNECT
Your access point for business and academic services at UNT occurs at my.unt.edu. All official communication from the university will be delivered to your Eagle Connect account. For more information, please visit the website that explains Eagle Connect.
See: Eagle Connect
LINK: eagleconnect.unt.edu/

ODA STATEMENT
The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter. You can now request your Letters of Accommodation ONLINE and ODA will mail your Letters of Accommodation to your instructors. You may wish to begin a private discussion

with your professors regarding your specific needs in a course. Note that students must obtain a new letter of accommodation for every semester.For additional information see the Office of Disability Access.
See: ODA
LINK: disability.unt.edu. (Phone: (940) 565-4323)

UNT Policy Statement on Diversity
UNT values diversity and individuality as part of advancing ideals of human worth, dignity and academic excellence. Diverse viewpoints enrich open discussion, foster the examination of values and exposure of biases, help educate people in rational conflict resolution and responsive leadership, and prepare us for the complexities of a pluralistic society. As such, UNT is committed to maintaining an open, welcoming atmosphere that attracts qualified students, staff, and faculty from all groups to support their success. UNT does not discriminate on the basis of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, or veteran status in its application and admission process, educational programs and activities, employment policies and use of university facilities.
See: Diversity and Inclusion
Link: https://idea.unt.edu/diversity-inclusion

Health and Safety Information
Students can access information about health and safety at: https://music.unt.edu/student-health-and-wellness

Registration Information for Students
See: Registration Information
Link: https://registrar.unt.edu/students

Academic Calendar, Spring 2023
See: Spring 2023 Academic Calendar
Link: https://registrar.unt.edu/registration/fall-academic-calendar.html

Final Exam Schedule, Spring 2023
See: Fall 2024 Final Exam Schedule
Link: https://registrar.unt.edu/exams/final-exam-schedule/fall.html

Financial Aid and Satisfactory Academic Progress

Undergraduates
A student must maintain Satisfactory Academic Progress (SAP) to continue to receive financial aid. Students must maintain a minimum 2.0 cumulative GPA in addition to successfully completing a required number of credit hours based on total hours registered. Students cannot exceed attempted credit hours above 150% of their required degree plan. If a student does not maintain the required standards, the student may lose their financial aid eligibility.

Students holding music scholarships must maintain a minimum 2.5 overall cumulative GPA and 3.0 cumulative GPA in music courses.

If at any point you consider dropping this or any other course, please be advised that the decision to do so may have the potential to affect your current and future financial aid eligibility. It is recommended that you to schedule a meeting with an academic advisor in your college or visit the Student Financial Aid and Scholarships office to discuss dropping a course before doing so.
See: Financial Aid
LINK: http://financialaid.unt.edu/sap

Graduates
A student must maintain Satisfactory Academic Progress (SAP) to continue to receive financial aid. Students must maintain a minimum 3.0 cumulative GPA in addition to successfully completing a required number of credit hours based on total registered hours per term. Music scholarships require a 3.5 cumulative GPA. Students cannot exceed maximum timeframes established based on the published length of the graduate program. If a student does not maintain the required standards, the student may lose their financial aid eligibility.

If at any point you consider dropping this or any other course, please be advised that the decision to do so may have the potential to affect your current and future financial aid eligibility. It is recommended you schedule a meeting with an academic advisor in your college, an advisor in UNT-International or visit the Student Financial Aid and Scholarships office to discuss dropping a course.
See: Financial Aid
LINK: http://financialaid.unt.edu/sap

RETENTION OF STUDENT RECORDS
Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. You have a right to view your individual record; however, information about your records will not be divulged to other individuals without the proper written consent. You are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the university's policy in accordance with those mandates.
See: FERPA
Link: http://ferpa.unt.edu/

COUNSELING AND TESTING
UNT's Center for Counseling and Testing has an available counselor whose position includes 16 hours per week of dedicated service to students in the College of Music and the College of Visual Arts and Design. Please visit the Center's website for further information:
See: Counseling and Testing
Link: http://studentaffairs.unt.edu/counseling-and-testing-services.

For more information on mental health issues, please visit:
See: Mental Health Issues
Link: https://speakout.unt.edu.

The counselor for music students is:
Myriam Reynolds
Chestnut Hall, Suite 311
(940) 565-2741
Myriam.reynolds@unt.edu

ADD/DROP POLICY

Please be reminded that dropping classes or failing to complete and pass registered hours may make you ineligible for financial aid. In addition, if you drop below half-time enrollment you may be required to begin paying back your student loans. After the 12th class day, students may drop a class up until the deadline through their my.unt portal. The last day for a student to drop a class in Spring 2023 is April 7. See Academic Calendar (listed above) for additional add/drop Information.

Drop Instructions: https://registrar.unt.edu/dropping-courses

STUDENT RESOURCES

The University of North Texas has many resources available to students. For a complete list, go to:
See: Student Resources
Link: https://success.unt.edu/aa-sa-resources
(Note: A printer-friendly PDF version is available by clicking the green button on the home page)

CARE TEAM

The Care Team is a collaborative interdisciplinary committee of university officials that meets regularly to provide a response to student, staff, and faculty whose behavior could be harmful to themselves or others.
See: Care Team
Link: https://studentaffairs.unt.edu/care-team