

Music Production and Engineering

Fall/Spring 2014 syllabus

Instructor: Mr. McGovern

Course Description:

Music Production and Engineering is an introduction to the concepts, methods, equipment, logistics, and creative adventure that is recording. This course will discuss the ideas and the gear that are used in not only high-end professional recording facilities, but right down to the humble interfaces and programs used in home studios worldwide. High quality music can be produced in a variety of ways, but there are some fundamentals that need to be followed in order to succeed.

Music Production and Engineering will first take you through a quick overview of the tools and ideas used in the recording process, and then proceed to focus individually on the those pieces. Through a combination of discussion and hands-on exercises you will learn and practice the proper techniques used throughout the recording process from microphone to masters.

Learning Goals:

Upon completion of MP&E, you should be able to express a basic understanding of the concepts practiced in the music recording process, and demonstrate the proper operation of the basic studio equipment needed to complete a recording. That being said, music production is an exciting and creative adventure, hopefully this will put you in the drivers seat for future projects!

Means of Assessing Student Learning/Grading

Students will be given a binder that they are to put their lesson plans and notes into. They are expected to bring this binder to class with them, and use the materials for reference during tutorials and lectures. To evaluate student's comprehension of the curriculum the following will be considered.

- A daily point value that will reflect a student's attendance and participation in class.
- Bi-weekly quizzes will be given to assess acquisition of knowledge and skills. Some quizzes will be in the paper and pencil format, and others will be hands-on demonstrations of ability to use essential studio equipment.
- A final, hands-on evaluation of student's ability to carry out a basic recording production task will also contribute to the overall grade.

The following is a breakdown of the areas we will be covering in the course. Each section has a focus of discussion/practice, a description, and the concepts and skills that you should be familiar with.

Overview of Music Production:

Introduction. What is music production? What do you think it is? How much experience do you have with recording, and/or recording equipment? What do you want to gain from this course? How would you like to apply it to your own projects?

- Why record?
- Scope of projects
- Types of Production
- Creative Process

Sound Mechanics:

Before getting our hands on any of the gear, prior to plugging in any microphones and running signal through our channels, we need to discuss sound as a whole. Our discussion on sound mechanics will be briefly scientific and require some talk of math. Manipulating sound first requires us to know how sound works in general. We will talk about:

- Frequency
- Wavelength
- Sound Pressure
- Amplitude
- Speed of Sound

Studio Essentials:

Overview of the essential equipment typically found in studios. The different types, general purposes, place within the typical studio and basic operation. We'll also do a brief tour of the OSA recording facilities. (We'll cover microphones all by themselves.)

- Consoles (01V96i)
- Monitors
- Patchbays
- Snakes
- Cables/Jacks
- DAW
- Interfaces (what do you have?)
- A/D - D/A conversion
- Software
- 3rd Party Plugins (what do you use?)

Basic Signal Flow:

Essential to the understanding of how audio is picked up, recorded and processed is signal flow. Signal flow is the path which the sound or audio travels along as it is manipulated within the recording process, from acoustic to digital the audio or sound waves are information, and the information must be processed in a basic method in order for it to be captured correctly.

- Transfer of Energy
- Conversion of energy
- Instrument/Mic level/DI
- Bussing

Microphones:

Microphones are the work-horses of the studio, this was true in the early days of recording and even with all the software synthesizers you can muster, you'll still need a handful of microphones to get some heavy lifting done in the studio. We will discuss mic setups when we get closer to recording.

- Types
- Pickup Patterns
- Uses
- Phantom Power
- Cables

Signal Processing:

As soon as a sound is produced you can begin to process it and capture it. We'll look at the gear used in the amplification, fine-tuning, tweaking, squashing, expanding, and polishing the sound from the moment it is produced.

- Outboard Processors/Plug-ins
- Microphone Preamps
- Equalizers
- Filters
- Compressors
- Limiters
- Gates

Signal Processing Effects:

Just as in the basic signal processing, effects add to the overall sound and can change the whole dynamic of a song or production. I almost guarantee you every song recorded has a little touch of reverb on it.

- Reverb!
- Delay
- Dither
- Filters

File Management:

Before you can even route a signal to a track or begin to think about pressing record, you have to get some things in order. File management is just as important for the smooth running session as it is for your sanity. If you hope to keep things in order during recording, mixing and into mastering, you better have your files in the right place, and backed up.

- Folders

- Projects
- Audio Files
- Backups/External Drives!!

DAW!!!!:

This is the meat and potatoes of the recording process. As much as some would like to be nostalgic and record to an old-school 2 inch tape machine, Digital Audio Workstations are the industry standard for tracking, mixing, and mastering. Recording software has allowed the average person with a little knowhow and patience to hack out home recordings and take full control of their creative energy. I'm going to get you up to speed on the ins and outs of DAWs.

- Protocols!!!!
- Project Management/Bitdepth/Samplerate
- File Management
- Routing Signal
- I/O
- Recording Audio!!!!
- Track Organization
- Editing

MIDI:

Musical Instrument Digital Interface, or MIDI. MIDI is to a computer programmer is just a protocol, but to a music producer, engineer or musician it is one of the most helpful tools in the bunch. We will explore the basics of MIDI and the many facets of it's functionality within music production.

- Logic Pro
- What is MIDI?
- Basics
- Routing
- Notes
- Editing
- Automation

Microphone Setups:

Just as important to choosing the right microphone for the job, is choosing how to set the microphone and instrument up in a given space, this includes the artist/musician too. There are some sneaky tricks when it comes to corralling the sound the way you want it to go.

- Positioning
- Baffling
- Pairing w/instruments

Live Recording Methods:

When it comes to capturing the sound of a well-rehearsed band it's not as easy as putting the band in the room with some microphones and pressing record. It takes a series of sessions and takes to produce a tight concise reproduction of the bands intentions. Once in the session the creative juices

continue to flow and a studio recording comes to life. We're going to start to tie in all the previous lessons and discussions during sessions and start to practice the recording techniques in a real world scenario.

- Session preparedness
- Project Scope/Artists intentions
- Studio setup
- Sequence of recording instruments/vocals
- Methods of recording instruments/vocals
- Saving/File Management/Backing up!! (there is a reason we're going over this twice)

Mixing:

Once a song or even a whole album has been recorded, the fine-tuning begins. You'll want to capture the best sound possible while in the recording process however there will almost always need to be some adjustments made to the tones so as to fit the into the mix. We're going to go over the basics of getting not only the levels just right, but the tones and frequencies as well. Again pulling ideas and practices from the previous lessons and discussions we will delve into the technical world of song mixing, putting to use our knowledge of the tools needed to get the mix just right.

- Proper listening
- Filtering
- Compression
- EQ
- Reverb
- Leveling
- Automation
- Stems
- Laybacks/Bouncing

Mastering:

Mastering is the final stage in the recording process. It is where the final mix is polished even further, and the audio information transformed into a Master. We will follow the methods that are considered industry standards with regards to volume and audio quality, and practice critical listening while examining the mastering process.

- Compression/Multiband Compression
- EQ
- Widening
- Limiting
- Dither
- Bouncing/Saving/Backing up!!

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