Georgia Institute of Technology
MUSI 4630 — Fall 2018
Music Recording & Mixing

Syllabus

Course Information

Class:

`Time`:	Tuesday & Thursdays 1:30pm–2:45pm
`Dates`:	August 20th–December 13th, 2018
`Place`:	Couch B04 (basement studio)

Instructor:

`Name`:	Dr. Nathaniel Condit-Schultz
`Email`:	natcs@gatech.edu
`Office`:	Couch 205A
`Office hours`:	Tuesdays & Thursdays 11:30am–1:00pm (or by appointment)

Course Description

This course is an introduction to the concepts and techniques of professional audio production, including sound *reinforcement*, sound *recording*, and sound *design*. **Sound reinforcement** refers to the mixing, processing, and amplification of live sound performances. **Sound recording** refers to the recording, editing, mixing, processing, and mastering of audio recordings. **Sound design** refers to the creation, processing, and manipulation of audio recordings for various artistic and commercial purposes.

This course has historical and theoretical components, but is focused on practical, hands-on work. **Theoretical** material covered includes relevant elements of acoustics, psycho-acoustics, and electroacoustic signals—how and why audio technology works. **Historical** material includes the history of recording technology, sound reinforcement, electroacoustic music, and musique concrète. **Hands-on** work includes a variety of practical projects, working directly with analog and digital hardware and software.

The emphasis in this course is *musical* audio production, though most concepts and techniques covered are applicable to non-musical audio production as well (theater, film, radio, announcing, etc.). We will not only cover the technical aspects of audio production, but also the aesthetic concerns and craft of music production *as an art*.

Learning Goals

In this class, you will learn:

- the theoretical bases, function, and usage of common analog and digital audio equipment;
- how to produce professional audio content;
- how to edit, process, and otherwise manipulate digital audio;
- standard sound reinforcement (live sound) setups and practices;
- fundamental audio recording practices, including pre-production, production, and post-production.

You will become familiar with a variety of analog audio equipment, including electroacoustic transducers (microphones, pickups, loudspeakers) and audio signal-chain controllers (cables, mixing boards, patch-bays, amplifiers, preamplifiers, direct-injection boxes, etc.). You will learn the principles of audio signal-processing, including equalization, compression/gating, reverb/delay, flanger, chorus, etc. You will learn how to use a Digital Audio Workstation (DAW), including digital-specific audio hardware (e.g., audio-to-digital converters) and the purely digital software which runs it all.

This course does *not* cover synthesis, advanced MIDI sequencing, or notation software.

Prerequisites

The class is suitable for students with little or no previous background in analog or digital audio technology. However, this course is intended for undergraduate students in Music or Music Technology. Non-music students are welcome only if: 1) space allows and 2) they can demonstrate to the instructor basic musical proficiency and computer fluency.

Course Structure

This course includes two lecture sessions each week. Class time will be divided between lectures, discussions, listening exercises, exams, and hands-on work, both as individuals and as groups. In addition, students will work approximately three hours per week outside of class. Some out-of-class time will be spent working on homework assignments that can be completed anywhere, while the remaining time will necessarily be lab time, spent working in School of Music studios. Lab time in studios must be scheduled in advance through the Microsoft Office365 calendar system. All students will be invited to become editing members of this calendar during the first week of class.

Course materials: All course materials will either be provided by the instructor or be freely available online. You do not need any audio equipment of your own. However, you should bring a laptop and headphones to all class sessions.

Hardware and Software: There are many high-quality digital-audio recording softwares—some proprietary, some free—, including Ableton Live, Audacity, Cakewalk Sonar, Cubase, Digital Performer, Logic Pro, and GarageBand. In this class, we will work with ProTools and its accompanying PreSonus hardware. However, you are not required to acquire or install ProTools on your own private machine, nor purchase PreSonus hardware. Rather, you will be able to complete all course work using Georgia Tech machines in School of Music studios. If you are familiar with other software (and/or compatible hardware) which is already installed on Georgia Tech machines, or on your own personal machine, you may use this alternative software with my permission. However, I cannot guarantee the same quality of assistance/support if you choose to use alternative software or hardware with which I am not familiar.

Musicians: With some exceptions, students may not play on their own recordings. Rather, you will ask other students in the class, or other musicians from outside the class, to perform for you.

Assignments

Homework: Over the course of the semester, there will be 6–10 small homework projects assigned. Several assignments will simply be reports on a particular topic or musical recording, presented to the class in two to five minutes. Other assignments will result in short, finished audio recordings—which will also be shared with the class, time allowing.

Live Shows: Students may participate in one or more live-sound reinforcement "mock" gigs outside of class time, working with the Georgia Tech rock/pop ensemble. Students will be assigned to fulfill some small role at these shows. These assignments are contingent on performance venue scheduling.

Midterm assignment: For the midterm assignment, students will work in groups to write and produce a short radio advertisement, featuring music, spoken voice, and sound effects.

Final assignment: The final assignment will be a finished recording of music. Each student will produce their own final project, but will work with a team of at least one other student. Students may *not* perform on their final projects—they must ask other musicians to perform. We will meet during the class's assigned final time—Monday, December 10th, 2:40pm–5:30pm—to listen to each others' final projects.

Team work

Group work will be a major component of this class. For all recording work in the studio, students will work with at least one other student. For homework assignments which involve audio recording, each student will be in charge of, and graded on, their own project—working as the project's producer. However, each student will also be paired with another student, who they will work with as an engineer. Thus, pairs of students will work together on two projects, with each student serving as producer of one project and engineer of the other. Producer/engineer pairs will schedule studio time in single blocks, dividing each session between their two projects as efficiency demands.

The midterm project will be a full fledged group project, with a group of 2–3 students working together to produce one deliverable final product.

For all group/team projects, students will submit short (1–3 sentences per student) anonymous commentaries regarding each of their team members contribution to the assignment (including their own).

Exams

There will be short midterm and final exams; both exams will take place during normal class hours, and likely will not require the entire 1:15 time slot. The midterm exam will be held on October 4th. The final exam will be held on the last day of class (December 4th). The final exam may be cumulative.

Exams will focus on terminology, theoretical concepts, and historical facts.

Attendance, Participation

You are expected to attend and actively participate in all class sessions. Absence or extreme tardiness (>5–10 minutes) from any class will result in points deducted from your participation grade. Attendance is just the bare minimum expectation: failure to regularly *participate* in class *will also affect your grade.*

Grading

Attendance/Participation	10
Homework	30
Midterm project	10
Final project	30
Midterm	10
Final	10

(*Tentative*) Class Schedule

Week	Date	Topic	Lesson
1	8/21	**Analog audio**	Introductions, Syllabus
			Acoustics
	8/23		Electroacoustics, Transducers
			Signal levels/chains/routing
2	8/28		Studio routing, Cables
	8/30		Microphones
3	9/4	**Digital Audio**	Audio⟷Digital converters
			DAWs, digital mixers
	9/6		Single-track recording
4	9/11	**Signal processing**	EQ, Reverb
	9/13		Compression, limiting, gates
			Flanger/Chorus etc.
5	9/18	**Miking**	Room acoustics
	9/20		Miking acoustic instruments
			Miking drums
6	9/25		**NO CLASS** (Instructor absent)
	9/27	**Live sound reinforcement**	Mixing board auxs, groups, send/receive
			Loudspeakers, power amplifiers
7	10/2		(*Field trip*), the House, the Stage
	10/4		**MIDTERM** exam
8	10/9		**NO CLASS** (Fall recess)
	10/11	**Studio Recording**	The studio as an instrument
			Musique Concrète
9	10/16		Production stages and roles
	10/18	**Pre-production**	Click/guide tracks, headphones
10	10/23		Studio arranging, layering
	10/25	**Production**	Multi-track recording
11	10/30		Overdubbing
	11/1		Miking voices, double-tracking
12	11/6	**Post-production**	Mixing
	11/8		FX and EQ
13	11/13		Panorama, Automation
			Sampling
	11/15		Advanced editing, Quantization
			Pitch correction
14	11/20		Incorporating MIDI, Drum machines
	11/22		**NO CLASS** (Thanksgiving)
15	11/27		Mastering, Distribution
	11/29		Review
16	12/4		**FINAL** EXAM
17	12/10		Final projects

Policy Statements

Late Work

Homework assignments are due ON THE DUE DATE. A penalty of one letter-grade per day will be applied to all late assignments. Documented illnesses and family emergencies are excepted, of course. Quizzes and exams cannot be made up unless you have a valid, documented excuse.

Academic Integrity

Students must do their own work on assignments, projects, and tests unless collaboration is previously specified and approved by the instructor. Students caught cheating will receive zero credit for that assignment/test and may be subject to further sanctions through the Office of Student Integrity. Students are expected to abide by the Georgia Tech Honor Code and avoid any instances of academic misconduct, including but not limited to:

1. Possessing, using, or exchanging improperly acquired written or oral information in the preparation for an exam.
2. Substitution of material that is wholly or substantially identical to that created or published by another individual or individuals.
3. False claims of performance or work that has been submitted by the student.

Please refer to the Georgia Institute of Technology Academic Honor Code for further information.

Reasonable Accommodation

In accordance with the Americans with Disabilities Act, students with bona fide disabilities will be afforded reasonable accommodation. The Office of Disability Services will certify a disability and advise faculty members of reasonable accommodations.

Learning Environment

As the instructor of this course, I endeavor to provide an inclusive learning environment. If you experience barriers to learning in this course, do not hesitate to discuss them with me, the Office of Disability Services, or the School of Music administration.

Changes to Course

Since all classes do not progress at the same rate, it may be necessary to modify the requirements laid out in this syllables, or their timing, as circumstances dictate. For example, the number and frequency of exams may be changed, or the number and sequence of assignments will be altered. In any such case, adequate notification will be given in writing and be discussed in class.

Equipment Treatment & Safety

In this course, students will make extensive use of audio equipment which is the property of the Georgia Institute of Technology, including the studio facilities themselves. This equipment is valuable, fragile, and potentially dangerous. Students are expected to handle all equipment with appropriate respect and caution. Students are also expected to monitor the behavior of everyone they invite into studio facilities, to assure that these guests handle equipment appropriately, and to prevent theft.

In this course, you will learn how to handle and use equipment in a manner which is safe for everyone in the studio and which won't damage the equipment. Of course, all equipment is expected to receive *some* minor damage and wear during use, and occasional accidents may even result in severe damage to equipment. Still, students are expected to treat Georgia Tech property respectfully, as they would their own property, and make every effort to minimize damage the equipment.

The following general rules will always be followed:

1. No open beverages in the studio. Anything which can spill *any* liquid if tipped over is forbidden.
2. No eating in the studio.
3. Any sound producing equipment should have its volume turned down when turned on/off.
4. Cables must be carefully wrapped.
5. All equipment should be returned to its appropriate storage place after use.

Failure to follow these rules—or any other rules I articulate in class—may result in points deducted from your final grade.

Students may not remove any audio equipment from studio without permission from the School of Music. Students caught stealing (or "borrowing") equipment will receive a grade of zero in *the course*, and be reported to the Office of Student Integrity.