

Course Syllabus
MUSC 2447
AUDIO ENGINEERING III

McLennan Community College
Waco, TX

Revised for Fall 2009

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AUDIO ENGINEERING III

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WHAT IS THIS COURSE?

AUDIO ENGINEERING III is a third semester Audio Technology course in which sophomore audio students are able to continue their study of recording skills. This course consists of lecture sessions, accompanied by MUSC 2286, a practicum laboratory in which students can integrate the materials and equipment covered by the lecture.

The text book is *ELECTRONIC PROJECTS FOR MUSICIANS*, by Craig Anderton. Periodical reading and reports will be from *Studio Sound magazine, EQ magazine, Electronic Musician Magazine.*

Each student will be required to assemble an electronic tool kit for use in this course.

ATTENDANCE POLICY:

Because of the technical nature of this course, tardiness or missed classes will seriously jeopardize your chances of success. If you experience a true emergency and must miss a class, contact the fine arts office. Your attendance will affect your grade as follows:

3 tardy = 1 absence

Accumulated absences will result in a proportional lowering of the student's grade.

25% absence will result in the student being dropped and/or failed, see the MCC official Attendance Policy statement at end of this syllabus.

GRADING POLICY:

A student's grade will be the cumulative total of the following criteria:

60% Performance on the objectives.

30% Attendance, professional attitude and conduct, evaluated by instructor's observation.

10% Construction of audio device.

The grading scale used in this class is:

A=90-100%

B=80-89%

C=70-79%

D=60-69%

F=BELOW 60%

OFFICE HOURS:

I will be glad to help you outside of class time. I have regular office hours posted outside of my office. Many times I am meeting with someone else in the studio or elsewhere during these hours, so be sure to make an appointment with me or leave a message for me with the secretary in the PAC office.

Disabilities/ADA

In accordance with the requirements of the Americans with Disabilities Act (ADA) and the regulations published by the United States Department of Justice 28 C.F.R. 35.107(a), MCC's designated ADA co-coordinators, Dr. Johnette McKown, Executive Vice President and Dr. Lynn Abernathy, Vice President, Student Services shall be responsible for coordinating the College's efforts to comply with and carry out its responsibilities under ADA. Students with disabilities requiring physical, classroom, or testing accommodations should contact Marc Sweatt, Disability Specialist, at 299-8122 or msweatt@mclennan.edu.

COMPETENCY and OBJECTIVES

The following **competencies** outline the purposes of this course. The **objectives** are the specific activities that we will carry out.

Competency 1 Demonstrate the mastery of the fundamentals relating to electronic theory and circuits.

Objective: Define current, voltage, ground, resistance, capacitance, ohms, alternating and direct current.

Objective: Describe the operational characteristics of electronic components used in audio circuitry; resistors, potentiometers, capacitors, semiconductors, diodes, transistors, integrated circuits, wire, switches, hardware.

Objective: Read schematic diagrams and identify components from a schematic and by physical observation.

Source: Class lecture \ lab, and Text chapter 1

Evaluation: Quiz; 80% mastery required

Competency 2 Assemble an electronic tool kit.

Objective: Identify and purchase the equipment and tools needed to build and repair electronic circuits; Volt Ohm-Milliammeter, pliers, cutters, strippers, screwdrivers, soldering equipment, holding devices.

Source: Class lecture \ lab, and Text chapter 3

Evaluation: Purchase and Assemble tool kit; 100% mastery required

Competency 3 Develop the basic skills to trouble shoot, build and repair electronic equipment.

Objective: Use a Volt Ohm-Milliammeter to read voltages, open circuits, short circuits, and test cables.

Objective: Perform soldering of cables and circuit components.

Objective: Analyze a sine wave using an Oscilloscope.

Objective: Select an electronic circuit to construct.

Objective: Build an audio device.

Source: Class lecture \ lab, and Text chapter 4, 5, 19

Evaluation: Quiz; 100% mastery required

Competency 4 Develop the necessary skills to do live 2 track recording.

Objective: Select the equipment needed to do live two track recording.

Objective: List the equipment needed to do live two track recording.

Objective: Explain the parameters dictating microphone and equipment placement.
Objective: Perform live 2 track recordings.
Source: Class lecture \ lab, and handouts
Evaluation: Performance of live 2 track recordings, 100% mastery required

Competency 5 Explain the fundamentals of interconnecting audio equipment.

Objective: Explain balancing, unbalanced, level matching.
Objective: Compare and contrast different grounding techniques.
Objective: Identify and Isolate the sources of hum and noise in an audio system.
Source: Class lecture \ lab
Evaluation: Quiz; 80% mastery required

Competency 6 Demonstrate the ability to engineer audio recording sessions.

Objective: Allocate and follow through with time budgets.
Objective: Perform efficient studio planning and setup\teardown.
Objective: Identify and Contrast microphone\input quality with desired sound.
Objective: Analyze signal flow problems, and respond effectively.
Objective: Operate console and patchbay functions; Set optimum levels throughout signal chain, and on the recorded medium.
Objective: Apply principles of diplomacy, maintain professional work ethics and relationships while in session.
Source: Class lecture \ lab, and hand outs
Evaluation: Quiz, Demonstration of skills; 80% mastery required

Competency 7 Develop the necessary skills to efficiently operate an analog multitrack recorder.

Objective: List the operating modes of a tape transport.
Objective: Perform transport operations for recording sessions; cleaning, demagnetizing, loading tape, locating, punching in.
Objective: Compile the necessary track sheets, time logs, tape labels for a recording session.
Source: Class lecture \ lab, and handouts
Evaluation: Quiz, Demonstration of skills; 80% mastery required

Competency 8 Explain the fundamentals of MIDI operations in the control room.

Objective: Explain audio triggering for midi devices, and midi control of audio devices.
Objective: Allocate audio outputs from midi voice modules to console.
Objective: Contrast the options of different midi controller input devices.
Objective: Explain the principles for SMPTE lockups between midi\audio systems.
Source: Class lecture \ lab, and hand outs
Evaluation: Quiz, Demonstration of skills; 80% mastery required

Competency 9 Develop the necessary skills to Program midi devices.

Objective: Define master settings editing, channel editing, voice editing, system

exclusive dumps, polyphony.
Objective: Perform programming of modules and voices (pan, level, channel, audio outputs, primary and secondary voice manipulation, sysex dump-restore).

Source: Class lecture \ lab, and hand outs

Evaluation: Quiz, Demonstration of skills; 80% mastery required

Competency 10 Develop the necessary skills for Computer sequencing.

Objective: Define computer\sequencer terminology (from handout).

Objective: Explain input ports, output ports, channel allocation, midi interface, for computer sequencing.

Objective: List the hardware and software equipment necessary for computer sequencing.

Objective: Perform midi computer sequencing, editing, midi volume changes, patch changes, pan changes, system exclusive dumps.

Objective: Perform midi and SMPTE synchronization of a sequencer to audio recorders.

Source: Class lecture \ lab, and hand outs

Evaluation: Quiz, Demonstration of skills; 80% mastery required

Competency 11 Demonstrate the fundamental operations of hard disk recording.

Objective: Explain the signal flow of a hard disk recorder's hardware and software components.

Objective: Perform boot-up, setup, patching, recording, and saving operations on the hard disk recorder.

Objective: Synchronize hard disk recorder with analog recorder and midi sequencer.

Objective: Allocate segments to proper library structures, and manage library functions.

Objective: Perform archive and backup operations.

Source: Class lecture \ lab, and hand outs

Evaluation: Quiz, Demonstration of skills; 100% mastery required

Competency 12 Develop the necessary skills to perform digital audio editing.

Objective: Perform non destructive cut and paste, delete, move segments, time shift, trim, copy, grab and place edits; destructive normalization, gain, fade editing.

Objective: Compile and edit a master sequence of songs.

Objective: Explain the use of the digital EQ.

Objective: Perform virtual mixing, track bouncing, automated levels, punch ins.

Objective: Program and use midi input device for virtual mixer control.

Source: Class lecture \ lab, and hand outs

Evaluation: Quiz, Demonstration of skills; 100% mastery required

Competency 13 Review information from audio trade periodicals.

Objective: Summarize procedures, trends, or technical information presented in articles from trade publications.

Source: Audio trade periodicals (Mix magazine, EQ magazine, Electronic Musician Magazine)

Evaluation: Monthly report due; 80% mastery required, must be typed and grammatically correct.

Competency 14 Develop audio critical listening skills.

Objective: Analyze recordings of students choice, identifying techniques, procedures, soundsources, instrumentation.

Source: Student provided commercial recordings.

Evaluation: Monthly oral report due; 80% mastery required

Competency 15 Demonstrate professional conduct.

Objective: Demonstrate regular attendance, promptness, adequate preparation, willingness to volunteer, the ability to deal with difficulties, work with groups, and deal with adversity.

Source: Skills demonstration.

Evaluation: Classroom observation by instructor; 80% mastery required

Class Attendance Policy

Regular and punctual attendance is expected of all students, and a complete record of attendance will be kept by each instructor for the entire length of each course. Students will be counted absent from class meetings missed, beginning with the first official day of classes. Students, whether present or absent, are responsible for all material presented or assigned for a course, and will be held accountable for such materials in the determination of the course grades.

Absence from 20 percent or three consecutive weeks (whichever occurs first) of scheduled lecture and/or laboratory meetings will be taken as evidence that a student does not intend to complete the course; the student will be dropped by the instructor. The instructor may reinstate the student if satisfied that the student will resume regular attendance and will complete the course.

If the student's 20 percent absences are accumulated *before* the official drop date, the instructor will assign a grade of W. The instructor may reinstate the student if satisfied that the student will resume regular attendance and will complete the course. If the student's 20 percent absences are reached *after* the official drop date, the instructor will either assign a W, if the student is passing, or an F if the student is not passing. In extenuating circumstances, the instructor may assign a W to a student who is not passing.

Regardless of the reason for a particular absence, each absence will count toward the attendance requirements in each course. Students will be permitted to make up class work and assignments missed due to absences caused by (1) authorized participation in official College functions, (2) personal illness, or (3) an illness or a death in the immediate family. Also, the instructor has the prerogative of determining whether a student may make up work missed due to absences for other reasons. It is the student's responsibility to inform the instructor of the reason for an absence and to do so in a timely fashion.

Students enrolled in TASP mandated developmental classes must adhere to attendance guidelines as established by the developmental education department. Students who are required by TASP to take a developmental course or courses and who drop such courses to the extent that they are no longer enrolled in any developmental courses will be administratively withdrawn from all classes at the College.

SCANS COMPETENCIES: All Students must master the following competencies:

Mastery will be demonstrated by in class recording sessions, presentations and reports; performances, and/or written assignments and exams.

RESOURCES

- R1: Allocates Time – demonstrated by preparation. Scheduling recording sessions and using the time properly to prepare assigned tasks to required standards.
- R2: Allocates Money – students will learn how to develop budgets for recording projects
- R3: Allocates resources and Facility Resources – students will learn how to plan Recording sessions using appropriate equipment and media.
- R4: allocates Human Resources – students will learn how to run recording sessions and how to interact with individual performing artists and of performing ensembles.

INFORMATION

- IF1: Acquires & Evaluates Information- student will gather and evaluate information according to instructions using textbooks and library resources
- IF2: Organizes & Maintains Information- student will organize and maintain information according to instructions given by the instructor
- IF3: Interprets & Communicates Information – student will interpret information and communicate according to instructions
- IF4: Uses Computers to process information: use computers in the recording studio to record performances

INTERPERSONAL

- IP1: Participates as a member of a team – students will learn how to function as a member of recording studio team.
- IP2: Teaching Others – students will be responsible for presenting in-class demonstrations.
- IP3: Serves Clients/Customer – Students will learn how to meet the needs of; and how to evaluate the expectations of industry clients and customers
- IP4: Exercises Leadership – students will learn how to be team leaders in in-class simulations and team activities
- IP5: Negotiates to arrive at a decision – students will learn how to negotiate contracts and interpersonal situations.

SYSTEMS

- S1: Understands systems – students will demonstrate the systematic inter-relationships of the equipment in the recording studio.
- S2: Monitors & Corrects Systems – students will learn how to monitor the equipment used during a recording session and how to correct problems
- S3: Improves & Designs Systems - Students will demonstrate mastery by producing recordings that will reflect understanding of operating system of the recording studio. Students are also expected to monitors the process and improve the process at every opportunity.

TECHNOLOGY

- T1: Selects Technology –students will learn to select correct technology for sessions
- T2: Applies Technology – Students will learn to select and apply the appropriate technology to performance requirements both when planning performances and during performances
- T3: Maintain & Troubleshoot Technology – students will learn to set-up complete staging of performance ensemble and how to troubleshoot related problems.