MUSC 1327 Audio Engineering I Syllabus Addendum
McLennan Community College, Waco, TX

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WHAT IS THIS COURSE?

AUDIO ENGINEERING I is the first semester Audio Technology course. This course consists of lecture sessions, followed by a laboratory in which students can work with the materials and equipment covered by the lecture. This Syllabus Addendum contains the details of how this class will be conducted, the competency assignments, and the other necessary information needed to successfully complete this class.

Be sure to visit the student link at http://www.ranchstudio.com regularly to access updated information and other helpful audio resources.

The text book is *MODERN RECORDING TECHNIQUES* (8th edition), by Huber-Runstein.

Periodical reading and reports will be from *Studio Sound magazine, EQ magazine, Electronic Musician Magazine*.

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.

GRADING POLICY:

A student's grade will be the cumulative total of the following criteria:
70%   Performance on the objectives.
30%   Attendance, professional attitude and conduct, Completion of live performance reviews, evaluated by instructor's observation.

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. 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.

Check in at http://www.ranchstudio.com/MccStudents.htm regularly to have access to all of the forms, syllabi, and other helpful audio information.

COMPETENCY and OBJECTIVES

The following **competencies** outline the purposes of each week's assignments for this course. The **objectives** are the specific activities that we will carry out. An important element of succeeding in the audio business is the ability to communicate well. Your ability to collect information, understand it, and then communicate it effectively is critical. In order to help you develop these skills, the goals and objectives for each week are outlined here. You will read the chapters listed for each week's competency, prepare a hand-written report following the objectives listed, and hand in the paper at the beginning of each class to receive credit. Each week's paper will be legibly hand written on lined paper, have the competency number in the title, and have your name in the upper right-hand corner.

Competency 1 Identify the use of audio, recording facilities, and employment opportunities in the field of Audio production. .
Objective: Identity different types of recording facilities.
Objective: Explain the use of audio in our modern world, and the many opportunities for creating audio and for audio employment. .
Objective: Identify the positions and jobs in the recording industry.
Objective: Describe the recording process and steps involved in recording studio work.
Source:Class lecture \ lab, and Text chapter 1
Evaluation: Written paper; 80% mastery required

Competency 2 Demonstrate the mastery of the fundamentals relating to the physics of sound pressure waves, and the auditory perception of these waves.
Objective: Identity the amplitude and frequency of a sound pressure wave on a wave form diagram.
Objective: Define audio terminology. (amplitude, frequency, velocity, wavelength, frequency response, phase, harmonic content, acoustic envelope, loudness levels (db), the ear and hearing process, perception of direction and space).
Objective: Calculate wavelength of sound pressure waves from speed of sound and the frequency.
Objective: Diagram the acoustic envelope of transient and sustained sounds.
Objective: Explain volume listening levels according to the Fletcher- Munson Curve.
Objective: Predict phase cancellation and reinforcement of sound waves.
Source:Class lecture \ lab, and Text chapter 2

Evaluation: Written paper; 80% mastery required

Competency 3 Demonstrate the mastery of the fundamentals relating to the science of acoustics.

Objective: Contrast the differences between a recording studio's requirements for Acoustic isolation and Frequency balance.

Objective: Explain how acoustic isolation and Frequency balance are achieved.

Objective: Identify High-frequency and Low-frequency absorption and reflection characteristics of building materials and studio constructions.

Source:Class lecture \ lab, and Text chapter 3

Evaluation: Written paper; 80% mastery required

Competency 4 Evaluate by listening to effect of sound in differing acoustical environments.

Objective: Analyze from student 's recordings of various locations, how room design and /or acoustic environment's impact the isolation, frequency balance, and The absorption of sound.

Objective: Identify direct sound, echo and reverberation.

Source:Class lecture \ lab, and Text chapter 2 and 3

Evaluation: Student recorded projects, 100% mastery required

Competency 5 Select and use appropriate microphones for recording sessions.

Objective: Define principles of microphone design and operation.

Objective: Define the characteristics and types of microphones.

Objective: Identify a microphone's pattern using a polar diagram.

Objective: Identify principles of microphone selection, placement, and stereo miking.

Objective: Identify commonly used studio microphones.

Source:Class lecture \ lab, and Text chapter 4

Evaluation: Written paper; 80% mastery required

Competency 6 Integrate the principles of digital audio recording with the necessary equipment.

Objective: Define the principles of the digital recording process.

Objective: Define the process of digital audio editing.

Objective: Identify digital recording machines of differing formats and storage types from visuals.

Objective: List current storage formats and operating systems.

Objective: Compare the advantages and disadvantages of digital and analog recording.

Source:Class lecture \ lab, and Text chapter 6,7,8

Evaluation: Written paper; 80% mastery required

Competency 7 Identify the equipment and procedures used in MIDI sound production and sequencing and integrate the use of Multimedia and the web.

Objective: Identify the applications of MIDI controllers, voice modules, and sequencers.

Objective: Explain the integration of multimedia audio.

Objective: Identify the various distribution options of multimedia audio.
Objective: explain the procedures for audio-web implementation.
Source:Class lecture \ lab, and Text chapter 9, 11
Evaluation: Written paper; 80% mastery required

Competency 8 Use amplifiers correctly to manipulate the levels for proper recording, and understand ground and power related issues.
Objective: Compare/Contrast the difference between preamplifiers and power amplifiers.
Objective: Identify and place preamplifiers in the audio signal chain.
Objective: Identify and place power amplifiers in the audio signal chain.
Objective: Define equalizers, summing amplifiers, distribution amplifiers, isolation amplifiers, impedance amplifiers, power amplifiers, voltage controlled amplifiers.
Objective: Identify and diagnose ground and electrical power issues in recording.
Source:Class lecture \ lab, and Text chapter 12,13
Evaluation: Written paper; 80% mastery required

Competency 9 Use an audio production console to record, modify, and playback audio signals.
Objective: Compare/Contrast the major types of professional audio consoles.
Objective: Identify and sequence the audio path through the console.
Objective: Explain how the console is used for the applications of basic tracks, overdubbs and mix down.
Objective: Define console automation.
Objective: Identify the virtual console of the computer based hard disk recording system.
Source:Class lecture \ lab, and Text chapter 14
Evaluation: Written paper; 80% mastery required

Competency 10 Explain the fundamentals of amplitude and wave shape signal processing.
Objective: Compare the similarities and differences between amplitude and wave shape processing.
Objective: Identify the pieces of audio equipment used to manipulate the amplitude and wave shape of audio signals.
Objective: Identify different types of equalizer units, and contrast their operational characteristics.
Objective: Identify a compressor and dynamics processing equipment and fundamental controls of dynamics processors and when to use compression, limiting, expansion, keying, and ducking.
Objective: Identify when to use delays, artificial reverberation and the other types of enhancers that are used in contemporary audio production.
Source:Class lecture \ lab, and Text chapter 15
Evaluation: Written paper; 80% mastery required

Competency 11 Analyze and discuss the fundamental principals of audio monitoring and loudspeaker use.
Objective: From lecture and classroom demonstrations identity the components in a loud

speaker system.

Objective: Compare the advantages and disadvantages of near/field and far/field monitoring.

Objective: Apply the principles of a loud speaker system's proper selection and use to placement in the control room.

Objective: Identify loudspeaker phase linearity by listening.

Source:Class lecture \ lab, and Text chapter 17

Evaluation: Written paper; 80% mastery required

Competency 12 Summarize the procedures for mastering audio recordings and preparing for manufacture and distribution.

Objective: List the steps involved in mastering an audio product in preparation for consumer media manufacture.

Objective: Explain the various types of audio distribution, and the formats required.

Source:Class lecture \ lab, and Text chapter 19, 20

Evaluation: Written paper; 80% mastery required

Competency 13 Develop the necessary skills to plan a recording session.

Objective: Define the procedures of Recording, Overdubbing, Mixdown, Editing.

Objective: Identify the needs of the client given a simulated recording project.

Objective: Allocate the time and material resources necessary to successfully complete a recording session.

Objective: Compile and complete the paperwork necessary for planning and tracking a recording session.

Objective: Prepare the studio and setup equipment for a recording session.

Objective: Explain the responsibility of the studio personnel.

Source:Class lecture \ lab, and Text chapter 15

Evaluation: 100% mastery required; Participation in class project.

Competency 14 Develop the necessary skills to execute a recording session.

Objective: Working with a team of students, carry out a studio recording project requiring the application of knowledge and skills learned from this course.

Objective: Identify client needs, allocate resources, complete necessary paperwork, and successfully complete three separate recording sessions involving tracking, overdubbing, mixing, and mastering.

Objective: Perform as part of a team sharing the responsibility of the various jobs of studio personnel in actual recording sessions.

Source:Cumulative Class lectures \ labs, and Textbook.

Evaluation: 100% mastery required; Participation in all three team recording sessions, carrying out assigned tasks applying the knowledge and skills learned from this course.

Competency 15 Review the recording process and explain proper session preparation and documentation.

Objective: Summarize procedures for session preparation.

Objective: Explain session documentation and its importance.
Source:Class lecture \ lab, and Text chapter 21
Evaluation: Written paper; 80% mastery required

Competency 16 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

Competency 17 Develop music business networking skills and co-lateral relationships.
Objective: Practice regular attendance to other artist's live performances, and share your
               experiences with other music business people. Each student is required to
               attend and review at least five live performances of MCC students/faculty each
               semester. You must hand in at least five written reviews of the concerts or
               performances that you attend. Details are at
               http://www.ranchstudio.com/MccStudents.htm
Source:Skills demonstration.
Evaluation: 5 Reviews handed in to instructor; 80% mastery required

Students in the McLennan Community College Music Industry Careers Audio Technology
Program are learning to operate Digital Audio Work stations (DAW's), as well as analog devices.
They are required to do the majority of their out-of-class work and projects on a DAW capable
computer. In order to complete their assignments, they must have access to a DAW capable
computer outside of the classroom. The need for a personal computer is required in order to
complete the assignments. It is recommended that the DAW audio computer should be
dedicated to the audio recording function, and not used for other non-audio tasks, in order to
maximize operation reliability and speed.