Recording Engineering Theory

STUDENT INFO	**INSTRUCTOR: DREW DANIELS**	**COURSE NO. X448.12**
REG. NO. T8871	**JUNE 23, 2008—SEPTEMBER 15, 2008**	**7:00 PM—10:00 PM**
4 UNITS	**Haines Hall A76**	**MONDAYS**

Course Objectives:

- To familiarize students with audio engineering in general and recording engineering in particular.
- To familiarize students with the standard practices and techniques of recording engineering.
- To provide students decision-enabling insights to aid facility and creativity in recording.
- To enable students to recognize critical elements in advertized and factual information about products and services associated with audio recording.

At the conclusion of the course you will have a better understanding of:

- The purpose and goal of recording projects such as narration, musical artists and performances.
- The methods of recording and the care, storage, identification and organization of audio data and media.
- The physical aspects of recording, manipulating, storing, handling, and playback of recordings.
- The critical components and equipment associated with the craft of audio recording and production.

Guest Speakers:
Guest speakers will be presented as they become available.

Exams:
All course grading will be determined by the final exam, which will be based on questions from material covered in the course or presented in the required text, plus a required student recording project (see below). The exam will be open-book, and all notes, books, tapes and class materials may be used during the exam period.

Grading:
Assessing individual creativity in a non-prerequisite class of students requires the judgment of the instructor. Every effort is made to assess each student according to their individual level of involvement and understanding, and without reflection of other students, therefore, individual improvement is the focus of assessment for this course. The final exam is typically a written essay type with between three and five questions, AND a **required recording** to be submitted. The written exam will be done at the class session—special circumstances requiring a student to make up the test or take it elsewhere ***must be cleared in advance*** with the instructor. Exam criteria include communication skills of a type an employer might use to rank job applicants. The written exams will be collected and graded off-site and the scores (final grades) made available to students. Overall grading will be a based on student demonstrating learned skills or understanding at his or her individual technical level, plus the creativity of the required recording project. These scores will be added to those for attendance to obtain the final grade score. Students should be advised that good attendance greatly improves understanding of the topics presented, as there is no assigned reading or specific assigned study. The required recording will be described in detail in class.

To receive notification of grades after the end of the term, you ***must*** turn in a stamped, self-addressed grade card or mail it within five days to:

Drew Daniels
ESPA Class X448.12
UCLA Extension - Room 437
P.O. Box 24901
Los Angeles, CA 90099-6137

PRÉCIS:

A practical and effective introduction to the theory, art, and craft of sound recording, this course is highly beneficial not only to the beginner but also to the experienced musician, producer, and music engineer. Instruction covers the theory and operation of the most commonly used signal processors, audio consoles, monitor loudspeakers, and microphones.

To understand Recording Engineering, it is necessary to first understand a few of the most basic elements of Engineering. Engineering has its own language and customs as does any profession. Recording Engineering also interfaces directly with performance artists, making it important for recording practitioners to seek and perfect the double set of skills and languages of both professions.

"Recording Engineering Theory" is intended to start the student off in the right direction and properly define what is a recording operator and what is a recording engineer. Technical background, while not required as a prerequisite for this course, is an essential make-or-break requirement for success in engineering, as the word engineering itself implies. Modern recording equipment and software, allow and encourage anyone to be a recording operator, as the flood of poor quality amateur recordings on the market attest. Recording Engineering on the other hand, requires the effective use of information and skills often ignored by or hidden from those educated primarily in the musical and visual creative arts.

SYLLABUS:

"*Recording Engineering Theory*" presents an overview of the art and the science required for success in the profession of recording engineering. Some of the topics covered (but not limited to) may include:

- **History of sound recording**
- **The physics of sound, sound pickup and sound playback**
- **Microphones and other sound capture devices**
- **Acoustics of audio production spaces**
- **Loudspeakers, critical and comparative listening**
- **Recording, manipulation, storage and playback of performances**
- **Live Recording**
- **The hardware of the audio engineering profession**

These critical topics are examined to provide students with an intuitive basis for making correct technical choices and more effective purchasing decisions. "Engineering" for audio recording is simply one more skill set to take the recordist and their recording projects beyond the quality and artistic levels available to their counterparts without real engineering exposure.

PLEASE BRING THE FOLLOWING ITEMS TO EACH CLASS MEETING:

SCIENTIFIC Calculator: *examples of qualifying types are the* HP 20S Scientific, Texas Instruments TI-25X Solar, Texas Instruments TI-30XA, Texas Instruments TI-36X Solar Scientific, Casio FX-250, Casio FX-260 Solar, or similar calculator, available at Office Depot, Staples or the UCLA bookstores at about $10. If your calculator does not appear on this list, it's required functions must include a "Pi" key and a "Log" key for calculation of decibels, voltage and power ratios.

REQUIRED book:

Title: MODERN RECORDING TECHNIQUES: 6th Ed.
Author: Huber, David M.; Runstein, Robert E., 1997 ISBN: 0-240-80308-6 Price: $44.95
http://www.modrec.com - amazon.com

OPTIONAL:
Title: HANDBOOK OF RECORDING ENGINEERING: 3rd Ed.
Author: Eargle, John M. 1996 ISBN: 0-412-09741-9 Price: $147 @ Amazon.com

These and other items are also available from:

Opamp Technical Books, 1033 N. Sycamore Avenue, Hollywood, CA 90038
phone: 800-468-4322 / 323-464-4322 fax: 323-464-0977
http://www.opamp.com

some books also available from Barnesandnoble.com

SELF - QUALIFICATION QUIZ

Here are a few very basic to engineering, every-day audio questions of the sort you might find on an employment questionnaire at a commercial recording studio, TV or radio station or an audio or video post-production facility.

If these questions seem too foreign or confusing, students are strongly encouraged to prepare by reading the recommended text before proceeding with the course.

Think simple, common-sense answers to the following questions even if you are not familiar with the terms, then

CIRCLE or WRITE IN the correct answer: **your name**_____

1. Which travels faster through air? **light** **sound**

2. What does the abbreviation "**VU"** stand for on an audio equipment meter scale? _____ units

3. How many **decibels** (dB) are there between "-10" and "-30 when read on a VU meter? _____**dB**

4. Can solid objects (such as speaker cones or microphone diaphragms) be moved or stopped instantly? **Y** **N**

5. You connect an amplifier to one loudspeaker and play tunes from your iPod (or constant signal source). What decibel change would you expect to get, assuming nothing else changed, if you plugged a second identical loudspeaker into the amplifier? **3 dB (twice the power)** — or — **10 dB (twice as loud)**

6. What is the mathematics word or term that describes how the numbers **2** and **½** are related? "_____"

7. Which makes better sounding recordings? **Macintosh computer** **PC computer** **No difference**

8. Which is louder, 120 volts or 120 Hz ? **120 V** **120 hertz** **no way to tell**

9. Are there any **permanent magnets** in a typical loudspeaker? **Y** **N**

10. Are there any **electromagnets** in a typical loudspeaker? **Y** **N**

11. In a cube-shaped room of 10 feet × 10 feet × 10 feet, your bass standing wave will be at what audio frequency? _____ Hz

12. What makes **STEREO** sound more "human" than **MONO** sound? _____

13. What common recording studio tool is used to measure and analyze the quality of the recorded product?

    _____

14. What do the terms "**44.1-16**" "**48/32**" or "**96/24**" refer to? _____ and _____

ESPA RECORDING ENGINEERING THEORY — STUDENT DATA

NAME _____ I AM USUALLY CALLED: _____

SEAT LOCATION:

WORK PHONE (____)_____ HOME PHONE (____)_____

FAX PHONE (____)_____

E-MAIL _____

WEB SITE _____

EDUCATION: (INCLUDE ANY TRADE SCHOOL OR COLLEGE MAJOR SUBJECTS)

_____

CURRENT WORK:_____

PAST WORK:_____

_____

CAREER GOALS FOR THE NEXT YEAR:_____

_____

_____

LONG-TERM CAREER GOALS:_____

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WHAT DO SEEK FROM THIS COURSE?_____

_____

COMMENTS:_____

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