

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

[CLASS ]

[MUSIC]

**Expanded Course Outline**

<b>Course Subject Area:</b>	<b>MU</b>
<b>Course Number:</b>	<b>3281</b>
<b>Course Title:</b>	<b>Music Recording</b>
<b>Units:</b>	<b>4</b>
<b>C/S Classification #:</b>	<b>04</b>
<b>Component:</b>	<b>Lecture</b>
<b>Grading Basis:</b> (graded only, CR/NC only, student's choice)	<b>Graded only</b>
<b>Repeat Basis:</b> (may be taken once, taken multiple times, taken multiple times only with different topics)	<b>Taken once</b>
<b>Cross Listed Course:</b> (if offered with another department)	
<b>Dual Listed Course:</b> (if offered as lower/upper division or undergraduate/graduate)	
<b>Major course/Service course/GE Course:</b> (pick all that apply)	<b>Major course</b>
<b>General Education Area/Subarea:</b> (as appropriate)	
<b>Date Prepared:</b>	<b>12/30/2014</b>
<b>Prepared by:</b>	<b>Arthur Winer</b>

**I. Catalog Description**

Project-based overview of the recording arts. History of recording technology. Introduction to professional recording studio equipment and techniques, including microphones, signal processing, and acoustic principles. Professional techniques for recording, editing, and mixing using Pro ToolsHD systems and other specialized equipment.

**II. Required Coursework and Background**

Prerequisite(s): MU 2281 or MU 228

**III. Expected Outcomes**

Students will gain the following:

1. Knowledge of terminology used in the recording studio and industry.
2. Knowledge of the history of the recording technology from the 1860s to the present.
3. Basic understanding of acoustics as it applies to recording audio.
4. Knowledge of the steps involved in the recording process.

5. Knowledge of the function of the equipment used in the studio, and under what circumstances the equipment is used.
6. Hands-on experience through recording group projects.
7. Completion of recording-based paper and presentation.
8. Deeper understanding of digital audio technology.

The outcomes of this course relate to the following Music Department Student Learning Outcomes:

#2: Communicate effectively--verbally and in writing--about specific musical works and musicians, about the creative process in music, and about music's role in human culture.

#3: Demonstrate musicianship skills (including those involving technology) and conceptual understandings.

#5: Articulate a holistic understanding of the many influences on any musical endeavor (e.g., cultural, artistic, technological, economic, etc.).

#6: Develop specialized knowledge appropriate to the option or emphasis area.

**BA in Music:**

#3. **Communicate effectively**--verbally and in writing--about specific musical works and musicians, about the creative process in music, and about music's role in human culture.

#4. **Demonstrate** creativity, musicianship skills, an understanding of appropriate technology, and conceptual understandings.

**BA in the MIS Option:**

#1. **Interpret** relationships between music and: commerce; technology; media; and audience.

**BM in Music:**

#1. **demonstrate** a high level of musicianship that facilitates independent preparation of music for performance.

#2. **utilize** current/recent technologies appropriate to the musical endeavor.

#4. **articulate** the distinguishing characteristics of multiple musical styles, traditions, and historical periods, **and apply** that knowledge to performance.

**IV. Instructional Materials**

Bartlett, Bruce & Jenny. *Practical Recording Techniques*. 6<sup>th</sup> Ed. New York: Focal Press, 2013.

Case, Alexander U. *Sound FX: Unlocking the Creative and Potential of Recording Studio Effects*. New York: Focal Press, 2007.

Millard, Andre. *America on Record*. 2<sup>nd</sup> Ed. Cambridge: Cambridge University Press, 2005.

Owsinski, Bobby. *The Recording Engineer's Handbook*. 2<sup>nd</sup> Ed. Boston: Centage Learning, 2009.

Rumsey, Francis. *Desktop Audio Technology: Digital Audio and MIDI Principles*. New York: Focal Press: 2004.

Thompson, Daniel M. *Understanding Audio*. Boston: Berkelee Press, 2005.

## **V. Minimum Student Material**

Headphones, blank media for backing up projects, 15-question & 50-question Scantrons.

## **VI. Minimum College Facilities**

1. Control room lab/class room large enough to accommodate monitoring equipment, instructor and seated students. Avid ProTools HD hardware & software. Computer system compatible with Avid hardware. Two hard drives. Two computer monitors. Internet access. Off-site server accessible via Ethernet for backing up audio data. Mixing console and/or digital audio workstation controller. Other signal processing equipment. Monitoring systems (speakers, amplifier and gain controller). Studio furniture including computer noise-isolation, equipment racks, speaker stands, console table, and chairs for instructor and students. Analog and digital cabling including patch-bay.
2. Separate tracking room lab/class room large enough to accommodate four-piece ensemble (minimum). Guitar amplifiers, drum kit, and piano. Analog and digital cabling. Assorted microphone collection and microphone stands.
3. Blackboard (or equivalent) on-line site.

## **VII. Course Outline**

1. Introduction to history of recording technology and processes from the 19<sup>th</sup> century to the present.
  - a) Pre-Edison technologies (piano rolls and music boxes).
  - b) Mechanical recording technologies (Edison cylinders, lacquer disks)
  - c) Electro-magnetic recording technologies (wire recorders, analog tape)
  - d) Advent of multi-track and stereo technology.
  - e) Digital audio technology.
  - f) Advent of the digital audio workstation
  - g) Consumer formats in parallel with professional formats.
2. Overview of acoustics.
  - a) Sound sources and parameters of sound,
  - b) Definition of sound
  - c) Sound harmonic series: partials, overtones, timbre,
  - d) Sound measurement.

3. Review of digital audio workstation, in particular the ProTools HD environment.
4. Introduction to the mixer and patch bay.
  - a) Generalities common to both analog, digital and virtual (DAW) mixers
  - b) Introduction to the input strip: auxiliary outputs, buss outs, pan pots, EQ, trim pot, input fader, input select, buss assignment.
  - c) Patch bays: normalization, connection type.
5. Introduction to microphones and speakers (transducers).
  - a) History.
  - b) Characteristics: transduction principles; frequency response; pick-up patterns; dynamic, ribbon and condenser types.
  - c) Techniques: History, mono, stereo, mix, multi-track. Impedance, proximity effect, off-axis coloration, acoustic phase cancellation, electronic phase cancellation, spacing techniques, multi-mic techniques, isolation. Instrument-specific mic'ing techniques.
6. Review and reinforcement of digital audio.
  - a) Nyquist theorem, sample rates, oversampling, decimation, bit depth, binary, dither, aliasing distortion, quantization distortion, pulse code modulation, direct stream digital, converters and other aspects of digital audio.
  - b) Legacy and state-of-the-art types of digital audio.
  - c) Digital file formats and delivery formats.
7. Review of signal processing
  - a) Filters and equalization: low pass, hi pass, band pass, band reject, notch filters, slope, cut-off frequency, reject band, pass band, dB/octave, EQ
  - b) Dynamics processing: compressors/limiters; expanders/gates.
  - c) Reverberation and delay units: echo, delay, reverb time.
  - d) Miscellaneous effects.

### **VIII. Instructional Methods**

1. Lectures, student involvement through discussions based on readings, lectures subjects and hypothetical problems.
2. Class divided into groups, each group given lab times and projects.
3. Group presentation of solutions to problems and/or results of lab activity.

### **IX. Evaluation of Outcomes**

1. Final exam.
2. Short quizzes throughout the quarter.
3. Class and lab participation through recording projects.
4. Presentations and papers.