College of San Mateo
Official Course Outline

1. **COURSE ID:** DGME 122 **TITLE:** Live Sound
   Units: 3.0 units **Hours/Semester:** 40.0-45.0 Lecture hours; 24.0-27.0 Lab hours; and 80.0-90.0 Homework hours
   Method of Grading: Grade Option (Letter Grade or Pass/No Pass)
   Prerequisite: DGME 118

2. **COURSE DESIGNATION:**
   Degree Credit
   Transfer credit: CSU

3. **COURSE DESCRIPTIONS:**
   Catalog Description:
   Students in this course will learn principles and techniques of sound reinforcement, including live sound history, theory, and technology with an emphasis on the technical manipulation of acoustics. Includes the latest networked audio systems, hands-on live sound operations for venues such as corporate conferences, theaters, and concerts. These are career skills for employment as an audio engineer or AV Equipment Technician.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
   Upon successful completion of this course, a student will meet the following outcomes:
   1. Set up and operate equipment for public address, recording, and broadcast of a live sound event.
   2. Demonstrate professional communication and collaboration skills as a sound reinforcement team member.
   3. Set up and operate audio consoles networked to digital devices by Bluetooth and AoIP for live events.

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
   Upon successful completion of this course, a student will be able to:
   1. Set up and operate equipment for public address, recording, and broadcast of a live sound event.
   2. Demonstrate professional communication and collaboration skills as a sound reinforcement team member.
   3. Set up and operate audio consoles networked to digital devices by Bluetooth and AoIP for live events.

6. **COURSE CONTENT:**
   Lecture Content:
   I. History of Live Sound
   II. Live sound equipment
   a. ANALOG
      1. XLR and TRS balanced connections
      2. multipin connections
   b. DIGITAL
      1. AES/EBU
      2. MADI
      3. ADAT lightpipe
      4. Firewire
      5. Dante Network
   c. Cables
      1. Shielding
      2. Capacitance
      3. Polarity
      4. Connectors
   d. Audio snakes and multi-boxes

   III. Signal flow

      a. Input busses
      b. Output busses
      c. Send/Return
      d. Mix matrix

IV. Loudspeakers

a. Portable speaker systems
b. Small venue installations
c. Large-scale venue installations

V. Distributed speaker systems: restaurants, stores, malls, and airports

a. Transformer-based ceiling speakers
b. Multi-zone speaker distribution
c. Meyer Constellation system

VI. Amplification

a. Understanding basic electrical properties and simple circuits

1. Voltage
2. Current
3. Power
4. Impedance
5. Grounding

b. Noise
c. Distortion
d. Voltage-Controlled amplifiers for distributed speaker systems

VII. Live Sound Consoles, Mixing, and personnel

a. Console controls and features for audience mix and amplification

b. Personnel in sound reinforcement for public address
c. Mixing a Live Show for Public Address

1. techniques and best practices for mixing in various acoustic spaces

VIII. Acoustics

a. Sound indoors

1. Early reflections
2. Reverberation
3. Absorption
4. Diffusion

b. Sound outdoors

1. Weather: temperature, humidity, wind
2. Delay towers

c. Using a graphic equalizer to control feedback and room nodes

IX. Testing and Troubleshooting

a. Using sound system test equipment and calibration tools
b. Troubleshooting sound reinforcement installations

Lab Content:

- Set up and test video projection systems
- Operate common presentation computer software on various platforms, including making changes to client presentation
- Demonstrate good customer service, including professional appearance, attitude and behavior expected in client environments
- Working at locations with union labor
- Conducting site surveys
- Use cloud storage for presentation back-ups
- Set up live-streaming of audio and video

- Trouble-shooting
- Properly set up and operate theatrical lighting
- Create special effects with lighting
- Learn to rig lights on a truss
- Construct a stage complete with screen, mic, speakers, lighting grid, pipe and drape

7. **REPRESENTATIVE METHODS OF INSTRUCTION:**
   Typical methods of instruction may include:
   A. Lecture
   B. Lab
   C. Activity
   D. Critique
   E. Field Experience
   F. Guest Speakers
   G. Observation and Demonstration
   H. Work Experience

8. **REPRESENTATIVE ASSIGNMENTS**
   Representative assignments in this course may include, but are not limited to the following:
   Writing Assignments:
   - Attend a live sound event and write an analysis of the sound design

   Reading Assignments:
   - Assigned readings from InfoComm (AVIXA) manual

9. **REPRESENTATIVE METHODS OF EVALUATION**
   Representative methods of evaluation may include:
   A. Class Participation
   B. Class Work
   C. Exams/Tests
   D. Homework
   E. Lab Activities
   F. Projects
   G. Quizzes

10. **REPRESENTATIVE TEXT(S):**
    Possible manuals include:
    A. Bill Evans. Live Sound Fundamentals, Cengage, 06-04-2010
    B. InfoComm International . AV Setup Guide for Events, Meetings, Conferences, and Classrooms, BICSI and InfoComm International, 05-01-2008

    Other:
    A. Live Sound International website: http://www.livesoundint.com/

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Course Originator: Michelle Brown