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University of Louisiana at Lafayette

College of the Arts

STEP Grant Request

Recording Studio Upgrade:
Developing System Input and Output

Robert Willey, School of Music

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Signature of Dean
College of the Arts

Title: Recording Studio Upgrade: Developing System Input and Output

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ABSTRACT

The School of Music has a professional multitrack recording system installed in its Recording Studio. Upgrading its input and output resources will allow for new educational experiences and greatly increase the quality of production work. The facility is used by student ensembles to make CD and DVD recordings, and by music media classes for instruction, lab work, and individual projects. The core of the system is a Pro Tools HD3 system which allows for twenty four tracks to be recorded simultaneously. Presently, however, the studio has only six microphones, which seriously limits the kind and scope of projects that can be produced there, and the educational experience for students taking recording classes.

A set of microphones, stands, and preamps is proposed which will allow for recording medium and large size ensembles. Students in classes will have the opportunity to experience the difference between microphones and to learn microphone selection practices when doing recording projects.

Mastering software will offer students the opportunity to learn an important phase of the music production process, by allowing them to perform harmonic balancing, edit tracks, and assemble industry standard CD disks.

Description of Proposal

a. Purpose of Grant and the Impact to Student Body as a Whole

The input stage in the recording process is the microphone. Sound from an instrument passes through the microphone which converts it to an electrical signal which can then be sampled and recorded. The standard practice for many instruments such as drums and piano is to use two or more microphones to capture the behavior of the sound field. The number of microphones limits the number of instruments that can be simultaneously recorded. Presently, only a few musicians can be recorded at a time because of the limited number of microphones that are available in the studio. Adding twenty one microphones to the studio resources will allow for student bands and class ensembles such as the jazz ensemble, the wind ensemble, the orchestra, choir, percussion ensemble and marching band to be recorded in the School of Music's studio. These microphones will also be used in Angelle Hall to record special events there.

Increasing the number of microphones will not only raise the number of instruments that can be recorded at one time, but will also give students the opportunity to learn how the choice of microphones affects the signal that is recorded. Each microphone has its own spectral characteristics and changes the sound that is picked up, and a critical aspect of the art of sound recording is choosing the right microphone for an instrument and placing it in the appropriate position. This is not possible at the present time because we do not have a variety of models to pick from, nor the stands necessary to place the microphone in the correct location.

The proposed set of microphone stands and booms will allow students to place the microphones in advantageous positions. Presently we have a few stands (vertical pipes attached to heavy bases) that hold the microphones, but none that can reach overhead instruments which is important for drums or ensembles to capture the sound as it radiates above the musicians. The proposed boom arms that we are requesting will attach to the stands and allow the microphone to reach close to the instrument without interfering with the musicians' movements.

The other aspect of a recording system's input phase is the choice of preamplifier, which raises the level of the signal coming from the microphone before it is sampled by the recorder. We presently have the generic preamps that come with the recording system but would like to offer at least three models of preamps so that students can experience the difference in sound that comes from using different preamps, and to hear how the sound is colored depending on which model and microphone combination is used, increasing their understanding of the audio chain and allowing for greater creative control in achieving a desired sound.

The microphone input system will benefit the Music Media program, the largest concentration of students in the Bachelor of Music program, as well as all students in the School of Music, since all are required to be in ensembles every semester and depend on recordings to give them feedback on their performance. Recordings also increase student satisfaction as they are able to enjoy a lasting record of their work, which can be shared with friends and family, and used for applications for grants, graduate school, and work. We often collaborate with other departments such as Theatre and Visua Arts in helping prepare materials for their productions. Recordings that are produced through the School of Music and distributed on CD, DVD, and over the Internet increase the prestige of the University and in the end benefit all students.

In addition to greatly improving the input to the recording system, two pieces of software will be added to create a mastering component to the studio's resources, thereby raising the quality of the output of recording projects. Mastering is the final phase of audio production where material from a group that has been mixed on different days, or perhaps from entirely different groups, is polished and put in sequence, so that it can sound its best in context with the entire collection of songs. We do not presently have mastering software, therefore students cannot be taught how to master projects, or use mastering tools to prepare the highest quality material the studio could be capable of producing.

b. Lifetime of Enhancement

Microphones last longer than computers and software. It is expected that the equipment will be used for more than 10 years.

c. Person(s) Responsible for implementation, installation, maintenance, operation, and training

Dr. Robert Willey teaches music media and manages the studios and laboratories in the School of Music. He will train and assist the other three professors and student assistants in the installation, operation, and maintenance of the audio equipment.

d. Details of Proposal's Budgeted Categories.

Hardware

Twenty-two microphones from a variety of manufacturers, each with unique sonic qualities and applications.

A locking cabinet will secure the microphones, reducing the opportunity for theft.

Nine microphone stands of various heights allowing microphones to be positioned correctly in proximity to performers.

Four channels of preamplification from three manufacturers, each with their own sonic characteristics.

Software

Audio mastering is one of the arts that should be applied in the preparation of CD recordings, the final step during which the overall sound of a project is polished. A mastering plugin will help improve the quality during the mixing process, and a dedicated mastering application will be used after individual songs have been mixed, in order to balance the volume between tracks, apply fade ins and outs, and fix any spectral imbalances.

Budget Proposal

1. Equipment

Microphones

(2) Oktava MK-012	689.00	1378.00
Comes with a variety of capsules for different applications		
(2) Sennheiser MD 421 II	370.00	740.00
Versatile microphones for use with ensembles		
(1) Mohave Audio MA-100	795.00	795.00
Small diaphragm, good for strings, orchestral instruments		
(1) AEA R84	962.00	962.00
Large ribbon mic, excellent transient response, wide frequency range		
(2) AKG C 414 B-XL II	910.00	1820.00
High quality microphones for recording ensembles and acoustic instruments		
(1) Audio Technica AT875R	215.00	215.00
Shotgun microphone		
(2) Shure SM57 dynamic microphones	92.00	184.00
Standard microphones for snare drum or guitar amp		
(1) Electro Voice Raven Dynamic Microphone	125.00	125.00
Great for vocals, electric guitar, or other instruments		
(1) Electro Voice RE20	399.97	399.97
Classic microphone used for voice, acoustic bass, and kick drum		
(1) Mojave Audio MA-200	870.00	870.00
Versatile tube condenser microphone for vocals, piano, acoustic instruments		
(1) Cascade Fat Head II stereo pair package	399.00	399.00
Two fine ribbon microphones, includes Blumlein stereo adapter bar		
(1) Cascade Elroy microphone	229.00	229.99
Multi-pattern tube microphone		
(1) Cascade V57/M39 three-microphone bundle	259.00	259.00
A transformerless V57 with two M39 condensers		
(1) Samson Concert 77 lavalier system	229.97	229.97

Wireless microphone		
(1) Centrance MicPort Pro *USB interface for microphone*	149.97	149.97

Microphone stands

(2) Ultimate Support MC-125 199.99 399.98
We have very few microphone stands in the studio, and none that can be raised to any significant height. These stands are the cheapest ones that are heavy duty enough to withstand student use. They reach up to 82" and can be used in the recording studio to record drums, ensembles, etc.

(1) Atlas Twin Mic Mount 24.97 24.97
A twin mic mount used to position two microphones in a stereo pair on one microphone stand.

(1) Audix Micro Boom 24.97 24.97
Pedestal stand for bass drum or amplifier

(5) Atlas Sound PB15EB 42.99 214.95
Booms for existing stands, allowing proper microphone positioning

(1) Cascade Pop eliminator 25.95 25.95
Remove singer's plosive air bursts

Microphone preamplifier

(1) Focusrite ISAOne 799.99 799.99
Neve circuit, clean

(1) Universal Audio SOLO/610 799.97 799.97
1-channel tube mic preamp and DI box providing vintage sound

(1) ART Digital MPA 399.97 399.97
2-Channel Class A tube microphone pre-amp

Microphone cabinet
A locking cabinet will be installed in order to secure the microphones 200.00

2. Software

Ozone 3 mastering plugin 199.97 199.97
Our recordings and mixes do not stack up against commercial productions, in part, because of lack of mastering tools. Ozone 3 is a mastering plug in for Pro Tools, to be used in the final phase of CD production. It will give us multi-band compression, advanced EQ, exciter, stereo imaging, and loudness maximizing.

Bias Peak Pro 6 389.95 389.95
Edit, balance volume, fade in/out, burn Redbook Standard CD

3. Supplies
    None

4. Maintenance
    No cost. Dr. Willey and his students will maintain the equipment

5. Personnel
    None

6. Others
    None

Total: **$11,881.80**

Timeline - Project Implementation Schedule

Length of Implementation: 1 year

Fall, 2008:

Secure funding, purchase equipment, install software

Spring, 2009:

Incorporate new resources into curriculum and studio projects

6. Additional Information

7. Previously funded STEP Projects

"School of Music Resource Center Upgrade" (7/07), co-investigator, new computer study stations, software, $21,638

"School of Music Pro Tools Recording System" (7/06), major renovation of recording studio facility creating professional 24-track digital audio recording system, $41,338.

"School of Music Resource Center Upgrade" (7/06), software to create web sites, piano instruction, software, wireless connectivity, administration software, ethernet cabling, Reason synthesis software, $4,657.

"School of Music Resource Center Upgrade" (1/06), upgrade software and hardware, $6,055.

"School of Music Resource Center Upgrade" (7/05), upgrade software and hardware, $4,055.

"Resource Center Upgrade" (1/04), upgrade workstations, server, video transfer, add DVD authoring, $4,902.