

SENATE COMMITTEE ON CURRICULAR AFFAIRS COURSE PROPOSAL FORM

Principal Faculty Member Proposing Course: **Mark Ballora, Assistant Professor of Music and Integrative Arts**

College: **Arts & Architecture**

Department or Instructional Area: **The Department of Integrative Arts**

Type of proposal: Add **X Change** Drop

Type of review requested: **Full X Expedited** (See [Guide to Curricular Procedure](#) for definitions of a full or expedited review.)

Course designation:

Abbreviation: **INART** Number: **258**

Course Title: **FUNDAMENTALS OF MIDI AND DIGITAL AUDIO**

Complete for special categories of UNDERGRADUATE (001-499) course proposals (check, if appropriate):

General Education

Writing/Speaking (GWS)

Quantification (GQ)

Health and Physical Activity (GHA)

Natural Sciences (GN)

Arts (GA)

Humanities (GH)

Social and Behavioral Sciences (GS)

Bachelor of Arts Course: Arts Humanities Soc/Behavioral Sci. Other Cultures
Honors (H) or Honors/Writing (M) or Honors/IIC (U) or Honors/1st-Year Seminar (T)
Intercultural and International Competence Permanent (GI) or One-semester (GI)
Writing-Intensive (W) Permanent or One-semester (W)

SUBMITTED BY _____ Date _____
Head of Department (or person in charge of instructional area)

REVIEWED BY _____ Date _____
College Representative (Senate Committee on Curricular Affairs or Graduate Council Subcommittee on New and Revised Programs and Courses)

APPROVED BY _____ Date _____
Dean of the College (or appropriate administrative officer)

After securing signatures, submit the following to the Curriculum Coordinator, University Faculty Senate, 101 Kern Graduate Building: (1) FULL REVIEW UNDERGRADUATE proposals, 1 copy of this form and 25 copies of supporting documentation; (2) FULL REVIEW GRADUATE proposals, 1 copy of this form and 15 copies of supporting documentation; (3) EXPEDITED REVIEW PROPOSALS, 1 copy of this form and 4 copies of supporting documentation.

Supporting Documentation Required For *Changed* Courses

A. University *Bulletin* listing

1. Present *Bulletin* listing

a. Abbreviation	MUSIC
b. Number	258
c. Title	FUNDAMENTALS OF MIDI AND DIGITAL AUDIO
d. Abbreviated Title *	FUND MIDI DIG AUD
e. Credits	3
f. Description **	Music Technology (introduction to how musical information is stored and processed in computer systems
g. Prerequisite(s)	MUSIC 008 and INART 055 or concurrent enrollment in either MUSIC 131 or 132
* 18 bytes or less ** 20 words or less	

2. Proposed *Bulletin* listing

a. Abbreviation	INART (no change)
b. Number	258 (no change)
c. Title	FUNDAMENTALS OF MIDI AND DIGITAL AUDIO (no change)
d. Abbreviated Title *	FUND MIDI DIG AUD (no change)
e. Credits	3 (no change)
f. Description **	Music Technology (introduction to how musical information is stored and processed in computer systems) (no change)
g. Prerequisite(s)	MUSIC 008 or concurrent enrollment in either MUSIC 131 or 132
* 18 bytes or less ** 20 words or less	

B. Course Outline

1. Old Course Outline (a brief outline of course content):

MUSIC 258 (1-3) The course will be divided into two areas of focus. The first will consider MIDI, a means of communicating musical instructions along digital devices. The nature and types of instructions will be discussed, with students completing a series of assignments in a sequencing program (such as Digital Performer). The second area will focus on digital audio—that is, how a digital music device is able to carry out instructions given via MIDI. Representation and manipulation of audio will be discussed, with students completing a series of assignments that combine the MIDI and audio capabilities of the sequencing program. It should be emphasized that this is not a workshop that trains students in a particular software package, but a general principles course that will allow them to translate their knowledge to a variety of software programs.

Students from outside the School of Music will be encouraged to take this course so that music students will be able to interact with students from more technical disciplines such as electrical engineering, communications and computer science. Thus, students from various backgrounds have the opportunity to learn from each other.

The first class meeting each week will be theory based, meeting in room 115. The second meeting will be project based, and meet in Music Technology Lab A.

Major Topics (a listing of major topics to be covered with an approximate length of time allotted for their discussion):

Weeks 1-2

Introduction and Acoustics Fundamentals

Week 3

Binary Numbers

Week 4

Digital Audio Fundamentals

Week 5

Audio Filtering

Weeks 6-7

Audio Effects

Weeks 8-9

Introduction to MIDI

Week 10

MIDI Notation Software

Week 11-12

MIDI Sequencing

Weeks 13-15

iMovie and the creation of a music video

2. New Course Outline (a brief outline of course content):

NO CHANGE

Major Topics (a listing of major topics to be covered with an approximate length of time allotted for their discussion):

NO CHANGE

C. Description of the Course (400 word maximum)

NO CHANGE

INART 258 (3) will cover the fundamentals of how musical information is stored and transmitted in digital devices. It will be broken into three sections.

The first section will be introductory. Acoustical principles will be covered, such as the nature of sound transmission and measurements of frequency, amplitude, phase, timbre and localization. Computer basics will also be covered, with topics including binary number representation and basic computer operation.

The next section will cover the MIDI transmission protocol that enables musical information to be stored and transmitted compactly. Topics will include the nature of the MIDI data structure, the types of messages that may be passed, and the suitability of MIDI for expressive performance. MIDI software will be discussed, including notation software, editor/librarian software and sequencers. The bulk of the course's project component will involve working with sequencing programs. Students will also be exposed to using MIDI on the web, downloading files and importing them into various applications.

The final section will cover digital audio so that students may understand how instruments capable of understanding MIDI messages are able to translate the instructions into audio signals. Topics will include sampling theory, digital vs. analog recording, filters, signal processing and editing sound files. Projects involving digital audio will also use a sequencing program that is able to combine MIDI and audio data.

The course will have two meetings per week. The first will be a lecture, covering theoretical principles. The second class meeting will be a hands-on lab demonstration. Students will also complete a final project that will be determined in consultation with the instructor, demonstrating the relevance of the course materials to the student's field of study.

Grading will be based on 2-3 short in-class exams, a series of web-based quizzes, a series of non-graded lab assignments, and a series of assignments using the sequencing software that require in-depth mastery of the program. Students will also complete a project in digital audio, typically resulting in a music video created in iMovie. The nature and composition of the final project will be decided through consultation with the instructor. This final assignment typically will demonstrate the relevance of the course contents to the students' major field of study.

Music technologies have generalized the act of making music from the traditional set of skills taught in music conservatories. Students mastering the skills in this course will benefit from an expanded and generalized sense of what music is and how it can be represented and performed.

INART 258 will be offered fall and spring semesters.

D. Faculty Responsible for Course Development

Mark Ballora, Assistant Professor of Music and Integrative Arts

E. Justification Statement

1. Instructional, Educational, and Course Objectives (this section should define what the student is expected to learn and what skills the student will develop):

The present prerequisites have proven to be needlessly restrictive to students not enrolled in MUSIC 131 or 132. The addition of INART 55 History of Electroacoustic Music (3) has proven to be unnecessary in terms of needed background and makes it very difficult for students not enrolled in the School of Music to meet the prerequisites originally approved for this course.

The only changes proposed for this course are in the prerequisites.

- **Justification provided in the original course proposal**

The types of music technologies covered in this course are already ubiquitous. Many middle schools and high schools have computer labs where they do similar projects. This reality has immediate implications for education graduates, and long-term realities for university faculty who will teach these students within 3-6 years. At the very least, university facilities and instruction should exceed those of grade schools, not lag behind them.

A basic understanding of these technologies has relevance for all areas of musical study. Music technologies are also of interest to students in many fields, and allow a bridge among music, multi-media and technical fields.

This course is slated to be part of the new minor program in Digital Arts and Technologies starting in Fall 2001, pending curricular approval.

- **Instructional, educational, and course objectives provided in the original proposal**

Students will gain a fundamental understanding of how computers may be applied to musical activities and, by extension, all multi-media.

Students will gain a generalized view of the nature of music in acoustical terms, a technical view of how acoustical information may be encoded, stored and manipulated.

Students will be asked to master an understanding of fundamental theories underlying MIDI and digital audio, to think constructively on the relationship between technology and music, and to complete a series of assignments that realize various aspects of music technology.

2. Evaluation Methods (Include a statement that explains how the achievement of the educational objectives identified above will be assessed. The procedures for determining students' grades should be specifically identified):

NO CHANGE

Students will complete 2-3 short in-class exams, a series of web-based quizzes, a series of non-graded lab assignments, and a series of assignments using the sequencing software that require in-depth mastery of the program. Students will also complete a project in digital audio typically resulting in a music video created in iMovie. The nature and composition of the final project will be decided through consultation with the instructor. This final assignment typically will demonstrate the relevance of the course contents to the students' major field of study.

3. Relationship/linkage of Course to Other Courses (this statement should relate the course to existing or proposed new courses. It should provide a rationale for the level of instruction, for any prerequisites that may be specified, or for the course's role as a prerequisite for other courses):

NO CHANGE

While there may be no direct link between the contents of this course and many traditional music courses, all music courses of study may be enhanced by knowledge of technology fundamentals. Theorists may use sequencers to illustrate various aspects of a piece to reveal its inner structure. Musicologists may be able to create sound files to add to web pages or presentations to illustrate the sound of the period they are exploring. Performers will gain new appreciation for the nature of musical information, and for the level of expression a performer must bring to a piece. Composers will find a new way to create and manipulate sound material. Educators will have any number of ways to deliver material effectively and attractively to students through multi-media technologies.

Non-music majors may also benefit. Regardless of the field of study, all students at some point will be asked to deliver a presentation of some kind. Virtually any presentation can be enhanced by sound elements.

Computer scientists, electrical engineers, communications and acoustics majors will find new applications of their field of study. These applications will be rewarding since the result involves both creative and technical applications.

4. Relationship of Course to Major, Option, Minor, or General Education (This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments):

NO CHANGE

Given the ubiquitous presence of technology in the field of music, the ultimate goal for the School of Music is to have this course be required of all music students, preferably at sophomore-level.

The electronic music composition course is required of all composition majors. This course will be an appropriate pre-requisite for that course, giving students practical technical experience so that the composition course may focus more on compositional problems.

5. Consultation with Appropriate Departments and Academic Support Units (The unit originating the proposal should consult all units with a known interest in the subject field, not simply those in the same college. Consultation should take place at the department and/or college level and should include department members at all locations. Some duplication of instruction is inevitable, but the Senate Committee on Curricular Affairs is concerned with keeping such duplication to a minimum. A written statement of consultation from related units and programs is required. Such advance consultation is one way to avoid later holds and referrals):

The course proposal for INART 258 was circulated to all faculty in the College of Arts and Architecture and all Associate Deans of all colleges at University Park and the Directors of Academic Affairs or Associate Deans at all other campus locations.

No objections to the proposal were received. Responses are attached.

6. If the course is to be offered by several colleges, a joint proposal should be submitted.

NA

7. A description of any special facilities (e.g. labs or equipment) required to teach the course effectively should be included in the proposal.

NO CHANGE

This course requires access to computers that can process digital audio files. The Music Technology Lab is designed to address the needs of courses such as these, offering 16 iMac computer workstations and a variety of music and audio software, as listed in section 6. Projection equipment is also needed so that students may follow the instructor in learning specific steps required for many music and audio operations.

Students may complete assignments in the technology lab. They will work on Macintosh computers, using Digital Performer as their main software tool, plus a variety of sound and MIDI utilities (MIDIGraphy, SoundHack, SoundEdit, QuickTime Pro).

The course, however, is not meant to train students on a specific platform or software program, which is why it will be important to introduce students to the more general concepts of Digital Performer in class, and let them learn the more specialized aspects of the program on their as the need arises. It is equally important that other programs be covered, which is why the utilities mentioned above will be introduced.

Most of these programs can run on either Windows or Macintosh platforms. Files are compatible and the programs are virtually identical.

Thus, the technology skills gained will be general and transportable.

8. The Technology Needs for Course Proposals form must be completed for new courses or changes in courses that have technology needs, i.e., computer projection equipment, etc. The information on the completed form will NOT be used as a criterion for accepting or rejecting a proposed course, but would provide information on the seemingly ever-expanding computer needs of the University.

NO CHANGE FROM ORIGINAL PROPOSAL

9. Frequency of Offering and Enrollment (Indicate how many students are expected to enroll and how often the course will be taught):

NO CHANGE

Current:

MUSIC 258 will be offered Fall and Spring semesters with a projected semester enrollment of 40 (annual enrollment 80).

F. Effective Date (the standard effective date for new courses is the first semester following approval on the Senate Curriculum Report)

INART 258 FUNDAMENTALS OF MIDI AND DIGITAL AUDIO (3) is planned for offering with the proposed changes in place beginning with the Fall Semester of 2006.