

Audio Preservation Principles and Practices

Fall, 2013 Course Syllabus

Instructor: Mike Casey, Director of Media Preservation Services, Media Preservation Initiative, Indiana University Bloomington; Member, Association for Recorded Sound Collections Technical Committee; Member, International Association of Sound and Audiovisual Archives Technical Committee

Morrison Hall 117, 855-8090, micasey@...

ILS Z604 9538, 11:00 AM–12:15 PM, Monday/Wednesday

Course Objectives

- Introduce the principles, standards, and best practices currently used to preserve audio recordings
- Provide beginning knowledge necessary to successfully manage audio preservation transfer work conducted either in-house or using an outside vendor
- Further develop students' technical skills as well as abilities to grasp technical issues
- Provide hands-on experience using various software tools for audio preservation, including metadata collection, selection, and audio recording/editing software
- Present in-depth information on key topics such as audio preservation systems, selection for preservation, technical and digital provenance metadata, defining and working with preservation files, existing standards and best practices, and quality control
- Provide training in the identification and evaluation of various audio formats including preservation problems and characteristics that impact stability
- Present an overview of auxiliary topics such as audio fundamentals, physical storage and handling of recordings, early field recording technologies, and digital repositories

Course Requirements

Student work is evaluated on the following:

5 assignments, each worth a different percentage as detailed below. Together they total 65% of the final grade

Final exam, 25% of final grade, take-home

Attendance and participation in class discussions, 10% of final grade. Students are expected to attend class having completed the assigned readings for the week and will be graded on attendance, level of preparation, and contributions.

Course Assignments and Timeline

(See separate documents for specific assignment instructions)

Assignment 1: Audio Object Evaluation from Listening. 5% of grade.

Using the digital files provided, evaluate each cut for track configuration and other playback issues and sonic problems.

Assigned Week 4, Due Week 5

Assignment 2: Prioritizing Audio Field Collections Using FACET. 15%

Using the collection descriptions provided, complete an evaluation for each collection using FACET.

Assigned Week 5, Due Week 6

Assignment 3: Collecting Technical Metadata for Audio Objects Using the ATMC Software. Entering BWF metadata using WaveLab and BWF MetaEdit. Marking Areas of Interest. 15%

Using the descriptions and digital files of audio objects provided, enter all relevant technical and structural metadata for each object. Enter BWF metadata for each file and mark areas of interest.

Assigned Week 9, Due Week 10

Assignment 4: Collecting Digital Provenance Metadata for Preservation Events Using the ATMC Software. 15%

Using the descriptions of preservation events provided, enter all pertinent digital provenance metadata for each event

Assigned Week 10, Due Week 11

Assignment 5: Creating a Minimal Metadata Strategy for Audio Preservation. 15%

Assigned Week 12, Due Week 13

Grading

Course assignments are designed to enable you to apply knowledge from the readings and lectures and gain practical experience with the types of tools used for audio preservation. You are encouraged to help each other with the mechanics of the assignments—how to manipulate the software or where to locate specific technical information, for example—but the work you submit (the answers) must be your own. The synthesis and attention to detail required to obtain correct answers are typical of audio preservation work and will help you develop critical skills in

this area. Any student who submits work completed by someone else or with answers provided by someone else will receive a score of '0' for that assignment.

All grades will be assigned according to the following academic standard, which was defined by student and faculty members of the Committee on Improvement of Instruction and approved by the faculty of the Department of Information and Library Science as an aid in evaluation of student performance. Late assignments will be marked down one letter grade.

A	4.0	Outstanding achievement. Student performance demonstrates full command of the course materials and evinces a high level of originality and/or creativity that far surpasses course expectations.
A-	3.7	Excellent achievement. Student performance demonstrates thorough knowledge of the course materials and exceeds course expectations by completing all requirements in a superior manner.
B+	3.3	Very good work. Student performance demonstrates above-average comprehension of the course materials and exceeds course expectations on all tasks as defined in the course syllabus.
B	3.0	Student performance meets designated course expectations and demonstrates understanding of the course materials at an acceptable level.
B-	2.7	Marginal work. Student performance demonstrates incomplete understanding of course materials.
C+	2.3	Unsatisfactory work. Student performance demonstrates incomplete and inadequate understanding of course materials.
C	2.0	
C-	1.7	Unacceptable work. Coursework performed at this level will not count toward the MLS or MIS degree. For the course to count toward the Degree, the student must repeat the course with a passing grade.
D+	1.3	
D	1.0	
D-	0.7	
F	0.0	Failing. Student may continue in program only with permission of the Dean.

**** Ethical Behavior**

Indiana University and Department of Information and Library Science policies on academic dishonesty will be followed. Academic (e.g. plagiarism) and personal misconduct by students in this class are defined and dealt with according to the procedures in the Code of Student Ethics. Students who engage in plagiarism, cheating, and other types of dishonesty will receive an F for the course. To help you recognize plagiarism, the IU Writing Center has prepared a helpful guide: [Plagiarism: What It is and How to Recognize and Avoid It](#).

Course Schedule and Readings

Class will meet in the Institute for Digital Arts and Humanities (IDAH) conference room on the first floor of the east tower of Wells Library unless noted below. A few class sessions will be held at the Archives of Traditional Music. To get to the IDAH conference room: when facing the

elevators on the first floor of the east tower, walk to the left and look the IDAH offices around the corner. Straight through the IDAH door and the conference room is the door on the right.

PowerPoint slides from the lectures will be made available via Oncourse.

Use of laptops for the purpose of taking notes is encouraged. Please do not go online during lectures—it is distracting to both the instructor and other students.

Schedule Overview:

Week 1: Course Introduction and Media Archiving Principles

Week 2: Survey of Legacy Formats and Recording Technologies, part 1

Week 3: Survey of Legacy Formats and Recording Technologies, part 2/Audio Preservation Systems

Week 4: Critical Listening and Identifying Problems

Week 5: Prioritization for Preservation

Week 6: Audio Preservation Principles, Standards, and Best Practices

Week 7: Preservation Digital Audio Files

Week 8: Audio Preservation Metadata, part 1

Week 9: Audio Preservation Metadata, part 2/Storage, part 1

Week 10: Digital Provenance Metadata Workshop/Storage, part 2

Week 11: Quality Assurance and Quality Control/Audio Preservation Studios

Week 12: Physical Restoration and Analog Playback

Week 13: Preservation Workflows and Working with Vendors

Week 14: Other Media Types: What About Video and Film?

Week 15: Developing a Media Preservation Program

All page numbers for PDF documents below are internal numbers for the publication itself not for the PDF container.

Week 1/August 26 and 28: Course Introduction and Media Archiving Principles

Topics: The audio preservation problem. The nature of sound archives. Media archiving principles. Environmental storage issues.

Readings:

1. Audiovisual Archives. Helen P. Harrison. Section 1.1, pages 1-9. In Audiovisual Archives: A Practical Reader. Compiled and edited by Helen Harrison. Available at:

<http://unesdoc.unesco.org/images/0010/001096/109612eo.pdf>

2. Audiovisual Archiving: Philosophy and Principles. Ray Edmondson.

Available online at: <http://unesdoc.unesco.org/images/0013/001364/136477e.pdf>

Read these sections in Edmondson:

Audiovisual archiving as a profession, Training..., Associations, sections 2.4-2.6 (document pages 9-13);

Carriers and media descriptors, Conceptual descriptors, 3.2.2 and 3.2.3 (pages 16-17);

Preservation and access, 3.2.6 (pages 19-21);

Historical emergence, 4.1 (pages 26-28);

World view and paradigm, Key perspectives, 4.4 and 4.5 (pages 33-41);

Preservation, 5.1-5.4 (pages 44-51)

3. IFLA Typology and History. Available online at:

http://www.ifla.org/VI/6/dswmedia/en/txt_meca.htm

4. Image Permanence Institute Media Storage Quick Reference

http://www.imagepermanenceinstitute.org/shtml_sub/MSQR.pdf

Pay particular attention to the types of decay, the four temperature categories, and the recommendations for magnetic tape.

5. Audio and Video Carriers. TAPE project. Part 2, pages 10-14.

Available online at http://www.tape-online.net/docs/audio_and_video_carriers.pdf

6. Meeting the Challenge of Media Preservation: Strategies and Solutions.

Available for download from <http://www.indiana.edu/~medpres/>

National Landscape/CIC Institutions, pages 17-19

Window of Opportunity/Preservation Principles, pages 23-31

7. The State of Recorded Sound Preservation in the United States: A National Legacy at Risk in the Digital Age. Read the Introduction and Summary, pages 1-8, and Chapter 1 from page 9-26

Available online at <http://www.clir.org/pubs/reports/pub148/pub148.pdf>

8. MPI Blog Post

Emphasizing Digital Preservation and Access

<http://mediapreservation.wordpress.com/2011/11/17/emphasizing-digital-preservation-and-access/>

Week 2/September 4: Survey of Legacy Formats and Recording Technologies, part 1

There is no class on Labor Day, Monday September 2

Topics: Characteristics of and preservation problems with cylinder, wire, magnetic tape and field/commercial disc formats

Readings:

1. FACET formats document, sections on open reel tape, analog audio cassette, and DAT, pages 6-54 and sections on lacquer and aluminum discs, wire recordings, pages 55-65. Available online from the Sound Directions website at:

<http://www.dlib.indiana.edu/projects/sounddirections/facet/downloads.shtml>

2. Audio and Video Carriers, TAPE project. Parts 1 and 3, Types of carriers and obsolescence of formats

3. Field Experiences with Recording Machines, John Lomax, 1937.

Available on E-reserves. Password: Machines. URL:

<http://ereserves.indiana.edu/eres/coursepage.aspx?cid=6209>

**Week 3/September 9 and 11: Survey of Legacy Formats and Recording Technologies/
Audio Preservation Systems**

Topics: Characteristics of, and preservation problems with, magnetic tape and field disc formats (continued); Functions and tasks of an audio preservation system and General Systems Theory

Readings:

1. Saga of a Folksong Hunter, Alan Lomax, 1960.

Available on E-reserves.

2. Sound Directions: Best Practices for Audio Preservation, pages 122-127

Available online from the Sound Directions website at:

<http://www.dlib.indiana.edu/projects/sounddirections/papersPresent/index.shtml>

3. Meeting the Challenge of Media Preservation. Stages of Preservation for Media Objects, pages 32-34.

Week 4/September 16 and 18: Critical Listening and Identifying Problems

Topics: Sound and hearing, audio terms and concepts, recognizing problems through critical listening.

Monday September 16: Meet at the Hoagy Carmichael Room, Archives of Traditional Music, bottom floor of Morrison Hall. Workshop on format identification and extracting data from audio objects with audio engineers Tony Tadey, Ilze Akerbergs, and John Dawson.

Readings:

1. Audio in Media. Stanley R. Alten. Seventh Edition. Chapter 2, Physics and Psychophysics of Sound. On E-reserves.

2. Sound Directions Appendix 1: Metadata Elements in the Audio Technical Metadata Collector. Section 2.6—Evaluation Tab, pages 15-23. Available at:
<http://www.dlib.indiana.edu/projects/sounddirections/papersPresent/index.shtml>

Week 5/September 23 and 25: Prioritizing for Preservation

Topics: Assessing preservation condition, evaluating risk, determining research value, other prioritization factors, IU Bloomington MPI prioritization project and workflow

Monday, September 23: Guest lecture on prioritization from MPI workers Asia Harman and Josephine McRobbie

Wednesday September 25: Workshop on evaluating field audio collections using the Field Audio Collection Evaluation Tool (FACET) software

Readings

1. IASA Selection Document (Task Force to establish selection criteria...)
Available online at: <http://www.iasa-web.org/task-force>

2. MPI blog posts

Why Prioritize? <http://mediapreservation.wordpress.com/2011/12/12/why-prioritize/>

Making Choices... <http://mediapreservation.wordpress.com/2011/12/15/making-choices-iu-bloomingtons-media-preservation-prioritization-process/>

The Uses of Enchantment <http://mediapreservation.wordpress.com/2012/02/02/the-uses-of-enchantment-2/>

3. FACET procedures manual, sections 1-5

Available online at: <http://www.dlib.indiana.edu/projects/sounddirections/facet/downloads.shtml>

Week 6/September 30 and October 2: Audio Preservation Principles, Standards, and Best Practices

Topics: role of standards and best practices, discussion of standards/best practices in use and how they are used, audio preservation in the 1980s and 90s, paradigm shift in the 90s

Readings

1. Sound Directions: Best Practices for Audio Preservation, pages 5-8

2. IASA-TC 03

Available online from the IASA website at:

http://www.iasa-web.org/sites/default/files/downloads/publications/TC03_English.pdf

3. IASA-TC 04, Second Edition, pages 4-11 (Introduction to first edition, chapters 1 and 2)
Available on reserve at Wells Library Kent Cooper Room or online at
<http://www.iasa-web.org/tc04/audio-preservation>

4. Carl Fleischhauer: Library of Congress Digital Audio Preservation Prototyping Project
http://www.arl.org/preserv/sound_savings_proceedings/Digital_audio.shtml

5. Ethics and New Technology, George Boston, pages 77-79. In Audiovisual Archives: A Practical Reader. Compiled and edited by Helen Harrison. Available at:
<http://unesdoc.unesco.org/images/0010/001096/109612eo.pdf> or from Oncourse, Resources.

6. The State of Recorded Sound Preservation in the United States: A National Legacy at Risk in the Digital Age. Read Chapter 2, Technical Issues in Digital Audio Preservation, pages 66-72 and pages 84 to the end of the chapter.
Available online at <http://www.clir.org/pubs/reports/pub148/pub148.pdf>

Week 7/October 7 and 9: Preservation Digital Audio Files

Topics: Digital basics, rationale for digitizing, characteristics of Preservation Master Files, uses/roles of file types, target file format, the Broadcast Wave Format, <bext> chunk metadata and timestamp

Readings

1. Audio in Media. Stanley R. Alten. Seventh Edition. Chapter 6, section on Digital Audio, pages 112-118. On E-reserves.

2. Sound Directions: Best Practices for Audio Preservation, Chapter 3, Digital Files

3. 5 Tips For What Not To Do When Creating A File Naming Structure
<http://www.avpreserve.com/papers-and-presentations/5-tips-for-what-not-to-do-when-creating-a-file-naming-structure/>

Week 8/October 14 and 16: Audio Preservation Metadata, part 1

Topics: Types of metadata for preservation, technical and structural audio object metadata, digital provenance metadata, emerging AES standards

October 16: Workshop on documenting audio objects using the Audio Technical Metadata Collector (ATMC) software

Readings

1. The State of Recorded Sound Preservation in the United States: A National Legacy at Risk in the Digital Age. Read Chapter 2, Technical Issues in Digital Audio Preservation, Metadata, pages 73-80.

2. Metadata Standards and Guidelines Relevant to Digital Audio. Music Library Association.
http://www.ala.org/ala/mgrps/divs/alcts/resources/preserv/audio_metadata.pdf

3. Sound Directions: Best Practices for Audio Preservation, Chapter 4, Metadata, and Appendix One, Metadata Elements in ATMC

4. PREMIS Data Dictionary for Preservation Metadata, version 2.0 (March, 2008)
Introduction (document pages 1-21), plus browse the data dictionary
Available online at: <http://www.loc.gov/standards/premis/v2/premis-2-0.pdf>

5. IASA-TC 04, section 3.9, Descriptive Metadata, pages 21-26

Week 9/October 21 and 23: Audio Preservation Metadata, part 2/ Storage, part 1

Topics: information packages, audio preservation packages, OAIS

October 21—Preparations for Assignment 3

October 23— Guest lecture on storage, Jon Dunn, Interim Assistant Dean for Library Technologies

Readings

1. Sound Directions: Best Practices for Audio Preservation, Preservation Packages, pages 102-108

2. Reference Model for an Open Archival Information System (OAIS), pages 1-1 to 4-20 (1-Introduction, 2-OAIS Concepts, 3-OAIS Responsibilities, 4-Functional Model only)
Available online at: <http://public.ccsds.org/publications/archive/650x0m2.pdf>

3. Requirements for Digital Preservation Systems. David Rosenthal.
Available online at: <http://www.dlib.org/dlib/november05/rosenthal/11rosenthal.html>

Week 10/October 28 and 30: Digital Provenance Metadata Workshop/Storage, part 2

Topics: carrier formats, preservation repositories, threats to digital data

October 28—Workshop on documenting digital provenance using ATMC and preparations for Assignment 4

Readings

1. The State of Recorded Sound Preservation in the United States: A National Legacy at Risk in the Digital Age. Read Chapter 2, Technical Issues in Digital Audio Preservation, Repositories and Long-Term Storage, pages 80-84.

2. Sound Directions: Best Practices for Audio Preservation, Chapter 5, Storage

3. IASA-TC 04: Preservation Target Formats and Systems, pages 91-117 and section 3.8, Structural Metadata-METS, pages 19-21

4. Risks Associated with the Use of Recordable CDs and DVDs as Reliable Storage Media in Archival Collections Kevin Bradley.

Available online at: www.unesco.org/webworld/risk

Week 11/November 4 and 6: Physical Restoration and Analog Playback

Topics: Understanding and managing the analog playback stage for tapes and discs including signal chains, playback procedures/techniques and best practices used by audio preservation engineers, cleaning discs, baking tapes, working through physical problems with open reel tapes and cassettes

Monday November 4: Guest lecture on analog playback, Mark Hood, Assistant Professor, Department of Recording Arts, Jacobs School of Music

Wednesday November 6: Meet at the Hoagy Carmichael Room, ATM. Workshop on using open reel tape machines and turntables with audio engineers John Dawson, Tony Tadey, and Ilze Akerbergs.

Readings

1. Sound Directions: Best Practices for Audio Preservation, Chapter 2—page 11 (Analog Playback), pages 24-30

2. IASA TC-04: Reproduction of Historical and Obsolete Mechanical Formats, pages 32-42

3. Capturing Analog Sound. Recommended Procedures, Analog Audio Tape, pages 18-24.
<http://www.clir.org/pubs/reports/pub137/pub137.pdf>

4. Capturing Analog Sound: Analog Audio Discs and Cylinders, pages 26-31

Week 12/November 11 and 13: Quality Assurance and Quality Control/ Audio Preservation Studios, Equipment and Personnel

Topics: differences between QA and QC; types of QC—visual, auditory, machine; QC strategies and risk/Personnel, expertise, equipment, and audio studios for audio preservation.

Readings

1. Sound Directions: Best Practices for Audio Preservation, page 114, pages 117-121

2. Sound Directions: Best Practices for Audio Preservation, pages 9-23

Week 13/November 18 and 20: Preservation Workflows and Working with Vendors

Topics: Workflow case studies, use of scripts and automated routines, parallel transfers, decision points for outsourcing, constructing RfP's

Readings

1. Sound Directions: Best Practices for Audio Preservation, pages 122-155
2. Meeting the Challenge of Media Preservation
 - a. from Chapter 4, Preservation Planning: In-house vs. Outsourcing Preservation Transfer Work, and The Indiana University Approach to Preservation Transfer, pages 35-46.
 - b. from Chapter 6, Facility Planning: IMPAC Audio and Video Preservation Workflow Functions, pages 82-85.

There is no class Monday November 25 and Wednesday November 27 due to Thanksgiving break

Week 14/December 2 and 4: Other Media Types: What About Video and Film?

Topics: Overview of preservation issues with video and film and comparison with audio.

Readings

1. The Film Preservation Guide. Chapter 2: Understanding Film and How it Decays, pages 6-18. Available at: <http://www.filmpreservation.org/userfiles/image/PDFs/fpg.pdf>
2. Meeting the Challenge of Media Preservation, Chapter 5—Strategies for Film

Week 15/December 9 and 11: Developing a Media Preservation Program

Topics: Surveys, assessing risk, determining priorities, risk management, preservation planning

Readings:

1. Readings from the IUB Media Preservation Survey Report at: <http://www.indiana.edu/~medpres/>

Read the following:

- a. Introduction
- b. Chapter 4, Preservation Risk: Degradation and Obsolescence. Skim the audio section (you have covered most of this already), but read the overview and video and film sections.
- c. Chapter 5, read the overview, skim the rest

2. Readings from Meeting the Challenge of Media Preservation: Strategies and Solutions

Read the following:

- a. Executive Summary
- b. Prologue
- c. Chapter 9—Campus Engagement