

LIS S604 Tools for Digital Preservation
Department of Library and Information Science
Indiana University School of Informatics and Computing
Indianapolis
Summer 2022

Section No.: 12025
Credit Hours: 3
Instructor: Brandon Pieczko
Email: bpieczko@iu.edu (use Canvas Inbox for course matters)
Prerequisites: S500, S581 or S503, S582
Instruction mode: This course is offered online only

Course Description

Building on the knowledge and skills acquired in LIS-S 582 (Digital Preservation), this course introduces students to practical tools for curating and preserving born-digital objects. Throughout the course, students will test and evaluate primarily free and/or open-source software designed to transfer, appraise (forensically), package, ingest, arrange, describe, and provide access to born-digital records. The course will also familiarize students with how to interact with digital files through a command line interface (shell) as a means for developing more efficient and scalable digital preservation workflows.

Required Readings/Resources

One textbook is required for this course and is available through IUPUI Bookstore and other commercial retailers.

- Ryan, H., & Sampson, W. (2018). *The no-nonsense guide to born-digital content*. London: Facet Publishing.

All additional required and supplementary readings (articles, book chapters, open-educational resources) will be provided within Canvas.

Required Software

You have three sources for software: IUware, IUanyWare, Office 365

- **IUware (iuware.iu.edu/)** allows students, faculty, and staff to download software at no charge. See [What is IUware? \(kb.iu.edu/d/agze\)](http://kb.iu.edu/d/agze)

- **IUanyWare (uits.iu.edu/iuanyware)** uses a web browser or mobile app to run certain IU-licensed software applications without your needing to install them on your device. See [What is IUanyWare \(kb.iu.edu/d/bbbr\)](https://kb.iu.edu/d/bbbr). Note: You will be asked to download and install Citrix Receiver the first time you use the full service.
- **Office 365 (uits.iu.edu/office365)** is a subscription-based service free to all IU currently enrolled students that provides multiple options for accessing the newest versions of Microsoft Office. See [About Microsoft Office 365 at IU \(kb.iu.edu/d/bexq\)](https://kb.iu.edu/d/bexq)

For more details, see: [About software at IU \(kb.iu.edu/d/aclo\)](https://kb.iu.edu/d/aclo)

Canvas works best in the most recent version of Edge, Chrome, Firefox, or Safari browsers. Canvas does not support Internet Explorer.

Because this course is an advanced, hands-on, tools-based course, students will be expected to download, install/run, test, and evaluate a variety of free and/or open-source software as required to complete the assignments. You will need to use a fully functional laptop or desktop computer (not just smartphone or tablet) with full high-speed internet capability. You must also have the necessary administrator privileges to install software and access the command line interface.

Teaching and Learning Methods

Active learning (AL), project-based learning (PBL), multi-media content, notes and presentations by instructor with audiovisual aids, optional web chat sessions, and asynchronous use of Canvas.

Assessments

Revised Bloom's Taxonomy (RBT)

1. **Knowledge/Remembering:** The ability to recall or recognize specific information or data.
2. **Understanding:** Understanding the meaning of informational materials, translation, interpolation and interpretation of instructions and problems.
3. **Application:** The use of previously learned information in new and concrete situations to solve problems that have single or best answers.
4. **Analysis:** Breaks down information/concepts into smaller components. Each component is identified and understood as is the relationship of these components to the whole.
5. **Evaluation:** The ability to apply a criterion or set of standards to conclude a value judgment.
6. **Creation, Synthesis:** The ability to merge knowledge into creating a new meaning or structure including demonstrating how and why various diverse elements work together.

Principles of Graduate and Professional Learning (PGPL)

1. Demonstrating mastery of the knowledge and skills expected for the degree and for professionalism and success in the field
2. Thinking critically, applying good judgment in professional and personal situations
3. Communicating effectively to others in the field and to the general public
4. Behaving in an ethical way both professionally and personally

Framework for Information Literacy (FIL)

The ACRL (Association of College and Research Libraries) Framework for Information Literacy is introduced throughout our curriculum.

1. Authority is Constructed and Contextual
2. Information Creation as a Process
3. Information Has Value
4. Research as Inquiry
5. Scholarship as a Conversation
6. Searching as Strategic Exploration

To learn more, go to [Framework for Information Literacy for Higher Education \(www.ala.org/acrl/standards/ilframework\)](http://www.ala.org/acrl/standards/ilframework)

MLIS Program Learning Outcomes (PLOs)

1. Connect core values and professional ethics to practice
2. Facilitate engagement in the information ecosystem
3. Curate collections for designated communities
4. Lead and manage libraries, archives and other information organizations
5. Organize and represent information
6. Conduct systematic research to inform decisions
7. Innovate professional practice with information services and technology

Assignments

Each student should not only read the assigned material but also arrive at a competent understanding of it prior to assessment. These measures will be used to assess student-learning outcomes:

- D: Discussion Posts – 10 %
 - 5 tool assessment and peer technical support discussions, 2 points each

- T: Tool Exploration and Evaluation Assignments – 50%
 - 5 assignments, 10 points each
- FP: Final Project: Integrative Tools Assignment – 40%
 - 1 final project, 40 points

Upon completion of this course, students will	RBT	PGPL	PLO	Assessment
Analyze the materiality of digital information including how it is defined, encoded, and translated into meaningful, human-interpretable signals.	4	1	2	D, T
Apply archival appraisal, accessioning, arrangement & description, and access principles to born-digital materials.	6	1, 2	3, 5	D, T, FP
Identify, test, and evaluate designated software tools and methods to achieve specific digital preservation actions, including those that require basic command line skills.	5	1, 2	3	D, T, FP
Distinguish the types of information you should collect about born-digital objects and how they are addressed in different descriptive standards and metadata element sets.	4	1, 2	2, 3, 5	D, T, FP
Determine how to evaluate and address potential legal, ethical, and technical restrictions when preserving and providing access to born-digital materials.	5	1, 2, 4	1	D, T, FP
Examine the importance and relationship of policy discussions and documentation to digital preservation workflow generation.	4	1, 3	4, 5	D, T, FP
Evaluate new and emerging tools, technologies, methods, and skills for more effective and scalable digital preservation workflows.	5	1, 2	2, 3	D, T

Course Schedule

See the course page in Canvas for details about readings, lecture notes, and assignments for each module.

Module 1: Digital Information Basics; Introduction to CLI

June 27 – July 3

- Materiality of digital objects: how digital information is defined, encoded, and translated into meaningful signals
- Learn basics of using the command line interface (CLI) to interact with a computer
- Learn about code repositories like GitHub and how they might be useful for digital curation work

Assignment:

- Discussion Post (2 points)
- File Analysis Tools, Code Repository, and CLI Basics Exercise (10 points)

Module 2: Selection & Appraisal; Acquisition, Accessioning & Ingest (Part I)

July 4 – 10

- Types of born-digital content (broad format categories)
- Types of mission statements, collection policies, and donor agreements needed to aid born-digital collecting activities
- Acquisition (establishing physical custody): adhering to archival acquisition principles including respect des fonds, provenance, and original order
- Methods of transfer (e.g., physical media, cloud services, FTP)
- Common file systems and how they function
- Disk imaging, write-blocking

Assignment:

- Discussion Post (2 points)
- Appraisal and File Transfer Tools Exercise (10 points)

Module 3: Acquisition, Accessioning & Ingest (Part II)

July 11 – 17

- Accessioning (establishing intellectual/legal control)
- Archival accessioning principles applied to born-digital media
- Basic acquisition considerations and strategies for handling digital media carriers
- Key concepts and use cases for digital forensics
- Basic technical aspects of and acquisition considerations and strategies for “network-born” media including websites, social media, and email
- Considerations for ingest and basic digital repository functions

Assignment:

- Discussion Post (2 points)
- Accessioning and Web-based Content Capture Tools Exercise (10 points)

Module 4: Describing Born-Digital Materials; Digital Preservation Storage and Strategies

July 18 – 24

- Understand the types of information you should collect about born-digital content
- Know how born-digital content is addressed in different descriptive standards and metadata element sets.
- Understand concepts like replication, fixity checking, and auditing
- Understand budgeting and how the economics of long-term retention and access factor into digital preservation work.
- Develop a basic understanding of policy making and long-term planning for digital preservation.
- Become familiar with some of the more prominent digital preservation policies that can be referenced in policy and planning documentation.

Assignment:

- Discussion Post (2 points)
- PREMIS Metadata and Fixity Tools Exercise (10 points)

Module 5: Providing Access to Born-Digital Materials; Designing and Implementing Workflows

July 25 – July 31

- How to effectively make decisions about access strategies based on the nature of your content, technologies, and the requirements of your users (designated community).
- Evaluating and addressing potential legal, ethical, and technical restrictions (e.g., DRM, encryption, password protection, watermarking)
- Strategies for arranging and describing access copies of born-digital content.
- Types of systems currently available for providing access to born-digital materials.
- How to break down workflows into manageable and logical component parts when approaching a project.
- Approaching workflows from an input-output or “pipeline” approach where every previous output becomes the input for the next step.
- How to incorporate MPLP strategies into various workflow designs

- Understand the importance and relationship of policies discussions and documentation to workflow generation.

Assignment:

- Discussion Post (2 points)
- PII Scanning Tools and Archival Description Exercise (10 points)

Module 6: New and Emerging Areas in Born-Digital Materials

August 1 – 8

- Software emulation and preservation
- Natural Language Processing (NLP)
- Growing your technical skills (scripting, APIs)

Assignment:

- Final Project: Integrative Tools Assignment (40 points)

Expectations, Guidelines, and Policies

Deliverables

You are responsible for completing each deliverable (e.g., task, final project) by its deadline and submitting it by the specified method. Deadlines and submission instructions are outlined in the syllabus or in supplementary documents accessible through Canvas. Students are expected to complete assignments on time and in the form specified. Students are to inform the instructor before the deadline via email if unable to complete an assignment.

For citation purposes, all MLIS students use the 7th edition of the *Publication Manual of the American Psychological Association*. This publication will help you structure your writing artifacts (e.g., research papers), write clearly and concisely, follow grammatical rules, and appropriately attribute source material. The Department of Library and Information Science values and expects quality, graduate-level writing.

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). <https://doi.org/10.1037/0000165-000>

Your Questions, Concerns, and Comments

Please do not hesitate to contact the instructor directly via Canvas mail with any questions. If needed, the instructor will also use Canvas Announcements to notify the entire group (e.g., syllabus change, instructor availability, etc.).

If you have problems accessing Canvas, please contact the University Information Technology Services (UITS) Support Center at uits.iupui.edu or 317-274-HELP. All course Announcements will be found in Canvas along with the course schedule, assignments, and other course documents.

Attendance

The course will be taught entirely online including web-based readings and resources, threaded discussions, plus online presentations and activities.

This course assumes that students can work independently. There are no required face-to-face meetings. There are no required synchronous online meetings. However, students are encouraged to e-mail or arrange an online chat with the instructor at any time.

A basic requirement of this course is that you will participate in all class activities and conscientiously complete all required course assignments. Students are expected to complete the assignments, quizzes, and projects on time, which is your attendance.

Incompletes

Incompletes are not automatically granted. You may arrange a grade of "I" or incomplete for a course with an instructor for special circumstances. Students need to have completed the majority of course work (75%+) at an acceptable level of achievement. You and the instructor must agree upon the terms for completing the course. Students who have multiple incompletes (2 or more) will be blocked from registering for additional LIS courses until there is only one (or zero) outstanding incomplete, or the student presents the department chair with a plan of action for completing all incompletes in a timely way.

Deadlines for the work for an incomplete to be finished are at the instructor's discretion. The deadline can be no longer than 1 year from the end of the semester, but can be earlier if the instructor specifies that. Left unchanged, an Incomplete automatically becomes an F after one year. See: Student Central: Incompletes (studentcentral.iupui.edu/grades-progress/incompletes.html)

Grading Scale

Grade	Description
A (100% to 96%)	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- (95.9% to 90%)	Excellent achievement. Student performance demonstrates thorough knowledge of the course materials and exceeds course expectations by completing all requirements in a superior manner.
B+ (89.9% to 87%)	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 (86.9% to 84%)	Good work. Student performance meets designated course expectations, demonstrates understanding of the course materials, and performs at an acceptable level.
B- (83.9% to 80%)	Marginal work. Student performance demonstrates incomplete understanding of course materials.
C+ through C- (79.9 % to 70%)	Unsatisfactory work. Student performance demonstrates incomplete and inadequate understanding of course materials. An incomplete may be granted under special circumstances.
D through F (69.9 % >)	Student has failed the course. An incomplete is not an available option.

Note that to satisfy a core requirement, grade must be B- or above. For electives, grade must be C or above (and overall GPA 3.0 or above).

MLIS Program Outcomes

The Master of Library Science (M.L.S.) program prepares students to become reflective practitioners who connect people and communities with information. Upon completion of the M.L.S. program, graduates are prepared to meet the program outcomes.

See [M.L.I.S. Program goals](http://soic.iupui.edu/lis/master-library-science/learning-outcomes/): (soic.iupui.edu/lis/master-library-science/learning-outcomes/)

ALA Core Competencies

A person graduating from an ALA-accredited master's program in library and information studies should know and, where appropriate, be able to meet the ALA standards.

See: [ALA Core Competences of Librarianship](#)

(www.ala.org/educationcareers/sites/ala.org.ala.org/educationcareers/files/content/careers/corecomp/corecompetences/finalcorecompstat09.pdf)

Code of Conduct

All students should aspire to the highest standards of academic integrity. Using another student's work on an assignment, cheating on a test, not quoting or citing references correctly, or any other form of dishonesty or plagiarism shall result in a grade of zero on the item and possibly an F in the course. Incidences of academic misconduct shall be referred to the Department Chair and repeated violations shall result in dismissal from the program.

All students are responsible for reading, understanding, and applying the *Code of Student Rights, Responsibilities and Conduct* and in particular the section on academic misconduct. Refer to [The Code of Student Rights \(studentcode.iu.edu/\)](#)

All students must also successfully complete [How to Recognize Plagiarism: Tutorials and Tests \(plagiarism.iu.edu\)](#).

You must document the difference between your writing and that of others. Use quotation marks in addition to a citation, page number, and reference whenever writing someone else's words (e.g., following the *Publication Manual of the American Psychological Association*).

Academic Misconduct

1. **Cheating:** Cheating is considered to be an attempt to use or provide unauthorized assistance, materials, information, or study aids in any form and in any academic exercise or environment.
 - a. A student must not use external assistance on any "in-class" or "take-home" examination, unless the instructor specifically has authorized external assistance. This prohibition includes, but is not limited to, the use of tutors, books, notes, calculators, computers, and wireless communication devices.
 - b. A student must not use another person as a substitute in the taking of an examination or quiz, nor allow other persons to conduct research or to prepare work, without advanced authorization from the instructor to whom the work is being submitted.
 - c. A student must not use materials from a commercial term paper company, files of papers prepared by other persons, or submit documents found on the Internet.
 - d. A student must not collaborate with other persons on a particular project and submit a copy of a written report that is represented explicitly or implicitly as the student's individual work.

- e. A student must not use any unauthorized assistance in a laboratory, at a computer terminal, or on fieldwork.
 - f. A student must not steal examinations or other course materials, including but not limited to, physical copies and photographic or electronic images.
 - g. A student must not submit substantial portions of the same academic work for credit or honors more than once without permission of the instructor or program to whom the work is being submitted.
 - h. A student must not, without authorization, alter a grade or score in any way, nor alter answers on a returned exam or assignment for credit.
2. **Fabrication:** A student must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citation to the sources of information.
3. **Plagiarism:** Plagiarism is defined as presenting someone else's work, including the work of other students, as one's own. Any ideas or materials taken from another source for either written or oral use must be fully acknowledged, unless the information is common knowledge. What is considered "common knowledge" may differ from course to course.
- a. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgment.
 - b. A student must give credit to the originality of others and acknowledge indebtedness whenever:
 - directly quoting another person's actual words, whether oral or written;
 - using another person's ideas, opinions, or theories;
 - paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
 - borrowing facts, statistics, or illustrative material; or
 - offering materials assembled or collected by others in the form of projects or collections without acknowledgment
 - c. **Interference:** A student must not steal, change, destroy, or impede another student's work, nor should the student unjustly attempt, through a bribe, a promise of favors or threats, to affect any student's grade or the evaluation of academic performance. Impeding another student's work includes, but is not limited to, the theft, defacement, or mutilation of resources so as to deprive others of the information they contain.
 - d. **Violation of Course Rules:** A student must not violate course rules established by a department, the course syllabus, verbal or written instructions, or the course materials that are rationally related to the content of the course or to the enhancement of the learning process in the course.
 - e. **Facilitating Academic Dishonesty:** A student must not intentionally or knowingly help or attempt to help another student to commit an act of academic misconduct,

nor allow another student to use his or her work or resources to commit an act of misconduct.

Other Policies

1. **Administrative withdrawal:** A basic requirement of this course is that students complete all required course activities. If a student is unable to attend, participate in, or complete an assignment on time, it is the student's responsibility to inform the instructor. If a student misses more than half of the required activities within the first 25% of the course without contacting the instructor, the student may be administratively withdrawn from this course. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and a student who has been administratively withdrawn from a course is ineligible for a tuition refund. Contact the instructor with questions concerning administrative withdrawal. Learn more at [IUPUI Administrative Withdrawal Policy \(studentcentral.iupui.edu/register/administrative-withdrawal.html\)](http://studentcentral.iupui.edu/register/administrative-withdrawal.html)
2. **Civility:** To maintain an effective and inclusive learning environment, it is important to be an attentive and respectful participant in all course exercises. IUPUI nurtures and promotes "a campus climate that seeks, values, and cultivates diversity in all of its forms and that provides conditions necessary for all campus community members to feel welcomed, supported, included, and valued" (IUPUI Strategic Initiative 9). IUPUI prohibits "discrimination against anyone for reasons of race, color, religion, national origin, sex, sexual orientation, marital status, age, disability, or veteran status" (Office of Equal Opportunity). Profanity or derogatory comments about the instructor, fellow students, invited speakers, or any members of the campus community shall not be tolerated. A violation of this rule shall result in a warning and, if the offense continues, possible disciplinary action.
3. **Communication:** For online courses, the instructor or teaching assistant should respond to emails within two Indiana University working days, which excludes weekends and holidays. The instructor should accept appointments for face-to-face, telephone, or teleconferenced meetings, and announce periods of extended absence in advance.
4. **Conferences:** To present research at an academic conference as speaker is commendable and aligns with the educational and research mission of the school and university. However, instructors can only provide accommodations for absences if a student is presenting work, such as a paper or poster, or is supported by a school or campus-level scholarship. The student should request from the instructor accommodation for an absence as soon as possible upon paper, poster, or scholarship acceptance. In the request for accommodation for absence, the student should provide supporting documentation of acceptance as well as confirmation from their mentor or campus sponsor that the presentation is to meet a research, educational, or diversity objective. Permission is granted at the discretion of the instructor. Students should not expect an exception for nonacademic conferences or conferences at which the student is not

presenting as speaker. Travel arrangements should not be made until the student has received permission from the instructor.

5. **Counseling and Psychological Services (CAPS):** Students seeking counseling or other psychological services should contact the CAPS office at 274-2548 or capsindy@iupui.edu. For more information visit the [CAPS website \(iupui.edu/health-wellness/counseling-psychology/\)](http://iupui.edu/health-wellness/counseling-psychology/)
6. **Course evaluations:** Course evaluations provide vital information for improving the quality of courses and programs. Students are not required to complete a course or instructor evaluation for any section in which they are enrolled at the School of Informatics and Computing. Course evaluations are completed in Canvas (Course Questionnaire). Course evaluations are open from the eleventh week. Course evaluations are anonymous, which means that no one can view the name of the student completing the evaluation. In addition, no one can view the evaluation itself until after the instructor has submitted the final grades for the course. In small sections, demographic information should be left blank, if it could be used to identify the student.
7. **Disabilities policy:** In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to reasonable accommodations. Please notify the instructor during the first week of class of accommodations needed for the course. Students requiring accommodations because of a disability must register with Adaptive Educational Services (AES) and complete the appropriate AES-issued before receiving accommodations. Students with learning disabilities for which accommodations are desired should contact the Adaptive Educational Services office on campus, and inform the instructor as soon as possible: [Adaptive Educational Services \(AES\) \(diversity.iupui.edu/offices/aes/index.html\)](http://diversity.iupui.edu/offices/aes/index.html), or 317-274-3241.
8. **Email:** Indiana University uses your IU email account as an official means of communication, and students should check it daily. Although you may have your IU email forwarded to an outside email account, please email faculty and staff from your IU email account.
9. **Emergency preparedness:** Know what to do in an emergency so that you can protect yourself and others. For more information, visit the emergency management website at [Protect IU \(protect.iu.edu/emergency-planning/emergency-contact/iupui.html\)](http://protect.iu.edu/emergency-planning/emergency-contact/iupui.html).
10. **University policies:** Numerous policies governing IU faculty and students may be found at [University Policies \(policies.iu.edu/categories/academic-faculty-students.html\)](http://policies.iu.edu/categories/academic-faculty-students.html).
11. **No class attendance without enrollment.** Only those who are officially enrolled in this course may attend class unless enrolled as an auditor or making up an Incomplete by prior arrangement with the instructor. This policy does not apply to those assisting a student with a documented disability, serving in an instructional role, or administrative personnel. See [Register: Get ready to take classes \(studentcentral.iupui.edu/register/index.html\)](http://studentcentral.iupui.edu/register/index.html).
12. **Religious holidays:** Students seeking accommodation for religious observances must submit a request form to the course instructor by the end of the second week of the semester. For information visit [You have the right to observe religious holidays \(studentcentral.iupui.edu/calendars/holidays/index.html\)](http://studentcentral.iupui.edu/calendars/holidays/index.html).

13. **Right to revise:** The instructor reserves the right to make changes to this syllabus as necessary and, in such an event, will notify students of the changes immediately.
14. **Sexual misconduct:** IU does not tolerate sexual harassment or violence. For more information and resources, visit [Stop Sexual Violence \(stopsexualviolence.iu.edu/\)](http://stopsexualviolence.iu.edu/)
15. **Student advocate:** The Office of Student Advocacy and Support assists students with personal, financial, and academic issues. The Student Advocate is in the Campus Center, Suite 350, and may also be contacted at 317 274-4431 or studvoc@iupui.edu. For more information visit [Office of Student Advocacy and Support \(studentaffairs.iupui.edu/advocacy-resources/index.html\)](http://studentaffairs.iupui.edu/advocacy-resources/index.html).

Mission Statement

The Mission of IUPUI is to provide for its constituents excellence in

- Teaching and Learning;
- Research, Scholarship, and Creative Activity; and
- Civic Engagement.

With each of these core activities characterized by

- Collaboration within and across disciplines and with the community;
- A commitment to ensuring diversity; and
- Pursuit of best practices.

IUPUI's mission is derived from and aligned with the principal components—Communities of Learning, Responsibilities of Excellence, Accountability and Best Practices—of Indiana University's Strategic Directions Charter.

Statement of Values

IUPUI values the commitment of students to learning; of faculty to the highest standards of teaching, scholarship, and service; and of staff to the highest standards of service. IUPUI recognizes students as partners in learning. IUPUI values the opportunities afforded by its location in Indiana's capital city and is committed to serving the needs of its community. Thus, IUPUI students, faculty, and staff are involved in the community, both to provide educational programs and patient care and to apply learning to community needs through service. As a leader in fostering collaborative relationships, IUPUI values collegiality, cooperation, creativity, innovation, and entrepreneurship as well as honesty, integrity, and support for open inquiry and dissemination of findings. IUPUI is committed to the personal and professional development of its students, faculty, and staff and to continuous improvement of its programs and services.