From schools and universities to public libraries and government agencies, a wide range of institutions are building digital libraries. Whether providing access to digital collections, institutional repositories, or other types of digital information services, library and information science professionals are needed to design, develop, and manage these emerging digital information sources and services. Information professionals may also collaborate with individuals, communities, and corporations in creating digital collections.

This course explores both the theory and practice of digital libraries in academic, research, community, government, and other settings. Topics include definitions; digital objects (e.g., digitization processes, archiving, preservation); acquisitions and collection development; organization and representation of information (e.g., metadata, ontologies, classification, description); information architecture; information access, user behavior and interaction; services, management, and evaluation; issues (e.g., intellectual property, privacy, social, economic, sustainability); evolving technologies; and research agendas.

Instructor Contact Information

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Course Description

Catalog Description: This course introduces digital libraries — networked information servers that provide access to multimedia data for local and remote users. Primary emphasis is on developing digital libraries, based on understanding tools for presentation and manipulation of multimedia as well as analysis of user needs.

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

The following entry skills are required for this course:

- Demonstrate technology skills including use of productivity tools (i.e., word processing, spreadsheet, presentation), web development tools, social media, and utilities (i.e., downloading drivers and plugins).
- Identify, select, access, and evaluate information found on the Internet and in the library.
- Use Canvas for discussions and information sharing.
You must complete S501, S502, and S503 prior to taking this course. It is strongly recommended that you complete S532 Information Architecture and S634 Metadata prior to taking this course.

This course makes the assumption that students are able to 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 a chat with the instructor at any time.

Learning Objectives

Students will be able to:

- Define digital libraries including digital library types, collections, and resources.
- Identify the essential components and relationships involved in digital libraries.
- Distinguish among traditional library resources, digital collections, digital libraries, and related terms.
- Discuss connections with disciplines and enterprises as well as the personal digital collections.
- Discuss differing conceptions, expectations, visions, and approaches to digital library development and implementation.
- Categorize and describe digital libraries by resources, specialties, disciplines, institutions, and audiences.
- Evaluate digital libraries and digital collections.
- Identify the audiences and stakeholders associated with digital libraries.
- Describe the foundations of digital library research and development.
- Identify key sources of information about digital libraries.
- Discuss the major issues in digital library research.
- Discuss the major issues in the development and management of digital libraries.
- Evaluate, select, and apply digital library technologies including open source and proprietary software for digital library development.
- Organize digital library content.
- Describe the digitization process including preservation.
- Identify the range of objectives both physical and digitally born that may be incorporated into a digital collection to meet digital library goals.
- Demonstrate skills in working with digital objects (textual documents, images, audio, video).
- Apply technology tools to digitize materials.
- Discuss the pros and cons of various file formats.
- Compare digital representation formats for textual, image, audio, and video materials.
- Demonstrate practical skills and theoretical concepts related to digital library planning, development, organization, management, use, and preservation.
- Develop and implement plans for user access to library library content.
• Apply guidelines associated with digitization (e.g., best practices, file formats, digital objects, protocols).
• Implement metadata standards associated with digital libraries.
• Define and apply controlled vocabularies.
• Discuss concepts in data and digital object interoperability, use, and reuse.
• Discuss digital archiving and preservation of both physical and digitally born objects.
• Describe user behavior in a digital library environment.
• Develop a prototype digital library collection.
• Address legal, ethical, economic, and social issues and challenges associated with digital libraries (e.g., interoperability, customization, personalization, digital preservation, copyright, privacy).
• Describe and give examples of how the copyright law applies to digital libraries.
• Discuss approaches to digital library services including access and use.
• Discuss the past, present, and future of digital libraries.
• Describe the constantly changing nature of digital environments and the implications for library and information science professionals.
• Analyze the research literature on digital libraries.

**MLS Program, Graduate Program and ALA Competency Connections**

This course addresses competencies related to the MLS program in the following areas:

- Assist and Educate Users
- Apply Management and Leadership Skills
- Work Effectively Within and Across a Variety of Organizational Structures
- Conduct and Analyze Research
- Demonstrate Basic Technical Expertise
- Approach Professional Issues with Understanding

This course is connected to the Principles of Graduate and Professional Learning in the following areas:

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

This course addresses a number of ALA competencies. According to ALA (2009), a person graduating from an ALA-accredited master’s program in library and information studies should know and, where appropriate, be able to employ:

- Foundations of the Profession
- Information Resources
- Technological Knowledge and Skills
Course Materials

The course content will be accessed through a series of web pages. In addition to readings and presentation materials, the pages also contain reflective questions and individual exercises to reinforce key concepts.

NO textbook is required.

Course Assignments and Assessments

The learning objectives will be assessed through a series of activities and discussions. Course assignments are intended to help you apply the course materials.

A series of “Spark” activities will help ignite learning.

- Spark 1: Breadth and Depth (10 Points)
- Spark 2: Personal Digital Object Assignment (15 Points)
- Spark 3: Metadata (10 Points)
- Spark 4: Content Management Systems (10 Points)
- Spark 5: Digital Library Investigation (15 Points)
- Spark 6: Digital Library Prototype Project (20 Points)
- Spark 7: Digital Library Issue or Specialization (10 Points)
- Spark 8: Real-world Connection (10 Points)

Spark 1: Breadth and Depth

Explore a dozen digital libraries that represent the breadth and depth of this type of library from small and local to large-scale international digital libraries. For each example, provide the following information:

- Name, URL
- Purpose and audience
- Examples of digital information sources and services (include at least one screen capture)
- Describe at least three features you think are distinctive or simply “cool”.

Justify why you think your dozen is representative of the breadth and depth of digital libraries.

Spark 2: Personal Digital Objects Assignment

Those involved in building digital collections must have skills in creating and manipulating digital objects. Examine resources in digital library collections. Then, manipulate objects that might be in your own personal digital library.
Requirements

- Describe each of the four material types (image, textual document file (pdf), audio, and video). Discuss the various ways these materials might be represented through a digital library interface and how they might be used by end-users.
- Discuss the distinct characteristics of each material type including the role of description information, representation style, annotations, and significant properties.
- Create a set of guidelines for digital preservation and digital archives related to original materials and digitally born objects for each type of material. Discuss preservation issues and practice concerns related to preservation.
- Identify three examples (each from a different digital library) of each of the four types of materials (image, textual document file (pdf), audio, and video).
- Compare and contrast the specifications used by each of the different libraries.
- Create a set of specifications for each of the four material types.
- Using personal materials, create digital objects that meet your specific requirements. The objects include: image file, textual document file, audio file, and video file.

Ideas

- Figure out how to convert a VHS video from your youth into a digital format.
- Record an oral history asking all your family members that same question.
- Digitize documents from your childhood such as a middle school report card or elementary award certificate.

Spark 3: Metadata

Select two very different digital libraries. Compare and contrast these two digital libraries and their approach to metadata. Use screen captures to show specific examples to illustrate your points. Be sure to address the following questions:

- What kind of metadata exists within the project?
- What standards does it implement?
- How is metadata presented to end users?
- How does the metadata affect the digital collection?

Design metadata tags for personal digital objects from the past assignment including an image file, textual document file, audio file, and video file.

- Use Dublin Core (provide values for each of the fifteen elements).
- Use VRA Core 4.0 schemas (use the unrestricted element set, providing the metadata values for as many fields as possible.
- Create a table (5-column format) of elements and values for each scheme. Identify the elements, your chosen values, the required format for these value (e.g., names—first and last, dates—month, day, year, places-locations), your description for each field, and classification as administrative, description, technical, preservation or use. You do not need to encode them as XML files.
Spark 4: Content Management Systems

Select two different digital libraries. Compare and contrast an open source and proprietary content management systems for digital collection development. Discuss the pros and cons of using each technology.

- One digital library must use the CONTENTdm system. Locate libraries using this system at http://www.oclc.org/contentdm/collections.en.html. For lots of local examples, go to http://www.ulib.iupui.edu/digitalscholarship/collections.
- One digital library must use open source software such as OMEKA.

Spark 5: Digital Library Investigation

Select, review, and evaluate an existing digital library of your choice. When you’ve selected your library, post it in Canvas. Only one person may review a library, so the first person who posts gets it.

Prepare a 5-6 page professional-quality review. Be sure to use headings and subheadings to make the report readable. Your report should feature numerous screen captures to illustrate your points. You should cite at least three professional articles (beyond the course website pages) that support your analysis. Be sure to include a reference list at the end of your report.

Your report should begin with the name of the digital library, a citation (URL), and any affiliated institutions. The review should address the following areas in addition to additional questions you develop yourself.

Administrative Aspects
- What is the purpose of the digital library?
- What is the mission and goals of the digital library?
- What community or audience does the digital library serve?
- Who are the likely users?
- Who owns, manages, and runs the digital library?
- What partnerships or affiliated institutions are involved?
- How is the project funded? Is it sustainable?
- How long has the digital collection been available?
- Are publications available associated with the project (e.g., reviews, research, evaluations)?

Collection Content
- Is a collection development policy or statement provided at the website? If not, what can be assumed based on the contents of the digital library?
- What is the scope of the collection?
- What types of objects does the collection contain?
- What is the origin of the objects in the collection?
- Does the collection include materials from multiple institutions?
- What disciplines, subjects, topics, and/or themes are included?

Information Organization
- How is content organized within the digital library?
- Is a metadata standard used? If so, which one(s)?
- What organizational techniques are applied (e.g., classification, categories, thesaurus, controlled vocabulary)?

Collection Storage and Preservation
- Does the collection contain digitized and/or digitally born objects?
- In the case of digitized artifacts, how are the originals preserved?
- In the case of digitally born objects, how are the originals preserved?
- What file formats are used for digital storage?
- What preservation and access formats are used?
- What digitalization procedures are in place?

Collection Access
- What technologies are used to run the digital library?
- Is open-source or propriety software used?
- Where is the software and content housed (i.e., internally or externally)?
- In what ways is the interface user-friendly and easy to navigate?
- What searching and browsing features are provided for end users (e.g., search capabilities, basic/advanced search, browsing options, results display, visualization aids, discover tools)?
- How are search results displayed?
- How are records displayed?
- How do the features of the user interface match the needs of potential users?

Technical and Service Aspects
- Is an access policy in place?
- Is the collection open or limited access?
- What are the conditions for access?
- Does the digital collection work properly?
- Is assistance provided for end users (e.g., help option, instructions, tutorials, FAQs, blog, digital reference, chat, email assistance)?
- What kinds of output, storage, saving, and printing options are available to end users? Are these effective for the audience?
- What are the copyright restrictions on the objects in the digital library? Is the copyright policy for the digital library clear?

**Spark 6: Digital Library Prototype Project**

Create a digital library prototype containing at least 20 digital objects. This should be more than a personal collection. If possible, use a real-world client such as a local library, historical society, nature group, club, church, company, or other organization’s materials for a more meaningful experience. You’ll submit both a paper along with your digital file.

**The Paper**
- Describe the mission, audience, and goals of your digital library.
- Discuss the digital library’s selection policy and approach to collection development.
• List guidelines you developed for the digitization project including specifications for each object type, file formats, digitization quality, and other elements. This should be specific enough that staff or volunteers would be able to create digital objects to your specifications.
• Describe your approach to knowledge organization (e.g., metadata, controlled vocabulary). List your metadata standard and description rules.
• Describe how users will access the collection. Use screen captures in your discussion.
• Describe and provide examples of the search interface and functions. Use screen captures in your discussion.
• Provide examples of sample search results. Use screen captures in your discussion.
• Provide a discussion of services that would be provided to support use of the collection such as FAQs, instruction, digital reference assistance. Include at least one example such as an FAQs sheet or tutorial.
• Provide the results of a field test with at least three users.
• Discuss the potential future of your collection.

The Collection
• Use the trial version of CONTENTdm or an open source content management system.
• Include at least three textual documents in pdf format, three images, one audio, one video with a total of at least 20 digital objects.
• Digitize at least ten of the digital objects yourself. No copyrighted materials may be used.
• Include metadata elements for each item.
• Create a defined search interface with a meaningful search results display.
• Be sure that all search functions are operational.

Spark 7: Digital Library Issue or Specialization

The class will be creating a Digital Library Primer for those interested in learning more about digital libraries. Selected articles from the class will be added to this primer.

Choose ONE of the following two areas to explore. When you’ve identified your topic, share it in Canvas. Only one student in the class may select a particular topic.

• Option 1: Identify a digital library specialization such as digital preservation, digital heritage, scientific collections, or art preservation. Identify the key concepts, vocabulary, and challenges associated with this specialization. Discuss the past, present, and future of this area. Share examples from at least three different digital libraries.
• Option 2: Identify a current issue related to digital libraries (e.g., technical aspects, open source, copyright, privacy, customization). Identify the key concepts, vocabulary, and challenges associated with this issue. Discuss the past, present, and future of this challenge. Share examples from at least three different digital libraries that connect to this issue.

The Article
• Write a publication-ready article (around 750 words) that provides an introduction and overview to this topic.
• Be sure to include at least three screen captures or other images to illustrate your thoughts.
• Cite at least eight articles from professional journals or websites. At least four of the articles should be from the following sources:
  • ACM Digital Library http://dl.acm.org/ (To access, use IUPUI Citation Linker)
  • D-lib Magazine http://www.dlib.org/
  • CLIR http://www.clir.org/pubs/reports/
  • Digital Humanities Quarterly http://www.digitalhumanities.org/dhq/
  • First Monday http://www.firstmonday.dk/ojs/index.php/fm
• Include full, consistent bibliographic citations for at least eight items.

Spark 8: Real-World Connection

Build your own project that bridges theory and practice. Select some aspect of the course not already covered in a previous assignment.

Course Grades

The points awarded for each activity are indicated on the Course Requirements. High expectations have been set for this course. Please notice that outstanding achievement will require careful attention to course criteria and exceptional quality in course assignments. Final grades are based on the following range within the total 100 points possible:

A 98-100
A- 95-97
B+ 92-94
B 89-91
B- 86-88
C 80-85
D 75-79
F below 74

The meaning of the letter grades follows the SLIS Grading Policy:

A: 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. The grade of A+ is not granted in SLIS, except in very exceptional cases.

A-: Excellent achievement. Student performance demonstrates thorough knowledge of the
course materials and exceeds course expectations by completing all requirements in a superior manner.

**B+: Very good work.** Student performance demonstrates above-average comprehension of the course materials and exceeds course expectations on all tasks defined in the course syllabus.

**B: Good work.** Student performance meets designated course expectations, demonstrates understanding of the course materials, and has performed at an acceptable level.

**B-: Marginal work.** Student performance demonstrates incomplete understanding of course materials.

**C+, C, C-:** Unsatisfactory work and inadequate understanding of course materials.

**D+, D, D-:** Unacceptable work; course work completed at this level will not count toward the MLS degree.

**F: Failing.** May result in an overall grade point average below 3.0 and possible removal from the program.

**Late and Incomplete Work**

Students may request an assignment extension due to personal or professional emergencies. These requests must be made prior to the due date. Extensions beyond a couple days will result in lose of points.

A final grade of "I" or "Incomplete" will NOT be given except in extreme situations. Please let me know if you're having difficulty completing the requirements of this course.

**IUPUI 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.

**IUPUI Values Statement**

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.

**Student Academic Conduct**

There is extensive documentation and discussion of the issue of academic honesty in the IUPUI Student Code of Conduct.

Students should be sure to read the Student Code of Conduct. The Academic Handbook states that faculty members have the responsibility of fostering the “intellectual honesty as well as the intellectual development of students.... The faculty member should explain clearly the meaning of cheating and plagiarism as they apply to the course... Should the faculty member detect signs of plagiarism or cheating, it is his or her most serious obligation to investigate these thoroughly, to take appropriate action with respect to the grades of students, and in any event to report the matter to the Dean of Students. The necessity to report every case of cheating, whether or not further action is desirable, arises particularly because of the possibility that this is not the student’s first offense, or that other offenses may follow it. Equity also demands that a uniform reporting practice be enforced; otherwise, some students will be penalized while others guilty of the same actions will go free.” (p. 172). For more information, go to [http://www.iupui.edu/code](http://www.iupui.edu/code)

**Student Accommodations for Disability**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities.

Students needing accommodations because of disability must register with Adaptive Educational Services and complete the appropriate form before accommodations will be given. The AES office is located in Taylor Hall Room 127, 815 W Michigan St Indianapolis, IN 46202 and may be reached by phone 317/274-3241 or 317/278-2052 TTD/TTY; by fax 317/274-2051; or by email aes@iupui.edu

For more information, go to [http://diversity.iupui.edu/aes/](http://diversity.iupui.edu/aes/)

**Administrative Withdrawal**

A basic requirement of this course is that you will participate in class and conscientiously complete writing and reading assignments. Keep in touch with me if you are unable to attend class or complete an assignment on time. If you miss more than half our class assignments within the first four weeks of the semester without contacting me, you will be administratively withdrawn from this section. Our class has assignments each week; thus if
you miss more than three assignment in the first four weeks, you may be withdrawn. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and if you are administratively withdrawn from the course you will not be eligible for a tuition refund. If you have questions about the administrative withdrawal policy at any point during the semester, please contact me.”

Learn more at http://registrar.iupui.edu/withdrawal-policy.html
Course Topics and Calendar

Week 1

**Overview of Digital Libraries**
- Definitions (what it is and isn't)
- Digital library types and related areas
  (e.g., federal projects, digital heritage, digital humanities, institutional repositories)
- Collections and resources (e.g., local, national, international, multidisciplinary)
- Well-known digital collections and services (American Memory, NARA, Wikipedia)
- Collections by document type (Flickr, Netflix, Hulu, Vine, YouTube)
- Mega Collections and Aggregators (DPLA, Internet Archive, Hathitrust)
- Past and present
- Evaluation (what’s an effective, efficient, and appealing digital library?)

Week 2

**Acquisitions and Collection Development**
- Policies
- Harvesting, publishing
- Digital preservation

Week 3-4

**Digital Objects** (textual documents, images, audio, video)
- File types and formats, transformation, migration
- Digitization processes
- Digital archiving
- Preservation of both physical and digitally born objects

Week 5-6

**Organization and Representation of Information**
- Metadata for digital libraries
- Data models (e.g., Linked Open Data, Dublin Core) for describing objects
- Ontologies, classification, categorization
- Subject description, vocabulary control, thesauri
- Object description and organization

Week 7-8

**Information Architecture**
- Systems design
- Identifiers, DOI
- Interoperability
- Security
- Quality control
- Infrastructure
- Technologies: proprietary (e.g., CONTENTdm) and open access (e.g., DSpace, EPrints, Fedora, Greenstone, OMEKA)
Week 9  
**Information Access, User Behavior and Interaction**  
- Information needs and seeking behavior  
- User interfaces and usability

Week 10  
**Services**  
- Indexing and searching  
- Reference services  
- Personalization

Week 11  
**Management and Evaluation**  
- Project management  
- Planning digital libraries  
- Evaluating digital libraries

Week 12  
**Issues**  
- Intellectual property  
- Privacy  
- Economics  
- Social issues  
- Sustainability

Week 13  
**Digital libraries and the future**  
- Evolving technologies  
- Research agendas