LIS S583 Data Curation and Management

Department of Library and Information Science
Indiana University School of Informatics and Computing, IUPUI

Fall 2020 Syllabus

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COURSE DESCRIPTION

This course introduces the active curation and management of data throughout its lifecycle to enhance its value for scholarship, science, education, industry, and other stakeholders. Students explore data activities, such as access policies and implementation, data reuse, data design through content-creator management, data entry into databases or repositories, and metadata creation.

COURSE LEARNING OUTCOMES with Revised Bloom’s taxonomy level

<table>
<thead>
<tr>
<th>Upon completion of this course, students should be able to:</th>
<th>RBT</th>
<th>Assessment</th>
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<tr>
<td>1. Assess the need for long-term data curation in public and private venues, its benefits, and limitations.</td>
<td>5</td>
<td>Discussion, reflection essay</td>
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<td>2. Conceptualize data curation activities and terms.</td>
<td>4</td>
<td>Data curation action exercise</td>
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<td>3. Analyze the characteristics of various data types generated and used by a variety of disciplines, subdisciplines, research communities, and government organizations.</td>
<td>4</td>
<td>Data curation action exercise; Data in the news; Data assessment exercise; Deposit practice examination</td>
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<td>4. Apply theoretical understanding to practical issues in data curation.</td>
<td>3, 6</td>
<td>Data in the news; Data assessment exercise</td>
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<td>5. Analyze the activities associated with each stage of the data curation lifecycle and their social, legal, ethical, and policy implications</td>
<td>4</td>
<td>Data curation action exercise; Data in the news; Discussion</td>
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<tr>
<td>6. Evaluate existing data curation tools and technologies to create a solution to different curation issues in the real-</td>
<td>6</td>
<td>Tool analysis; Discussion</td>
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world context by applying data curation concepts, terms, and theories.

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<td>7. Analyze critical issues associated with the storage, backup, and security of data to create a solution.</td>
<td>4, 6 Storage checklist exercise</td>
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<td>8. Analyze new roles and responsibilities for data curators in many sectors.</td>
<td>4 Discussion; Data in the news</td>
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<tr>
<td>9. Create a data preservation and management plan.</td>
<td>6 Data management plan</td>
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**MLS Program Outcomes**

**PG 3: Curate Collections for Designated Communities**

- Information professionals are responsible for curating various types of information and/or collections while collaborating with diverse designated communities throughout the information/data lifecycle. Curation is the selection, deselection, management, preservation, collection, and archiving of information, and it establishes, maintains, and adds values to information for present and future use. Curation is essential stewardship to enhance and maintain the long-term value of data, information, and collection.

**Core Competencies of Librarianship** as formulated by the American Library Association were approved and adopted as policy by the ALA Council, January 27 2009. A person graduating from an ALA accredited master’s program in library and information science should know and, where appropriate, be able to employ the following:

2. Information Resources

2A. Concepts and issues related to the lifecycle of recorded knowledge and information, from creation through various stages of use to disposition.
2B. Concepts, issues, and methods related to the acquisition and disposition of resources, including evaluation, selection, purchasing, processing, storing, and deselection.
2C. Concepts, issues, and methods related to the management of various collections.
2D. Concepts, issues, and methods related to the maintenance of collections, including preservation and conservation.

**Principles of Graduate and Professional Learning**

This course addresses the following:

- Demonstrating mastery of the knowledge and skills expected for the degree and for professionalism and success in the fields.
- 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.

**How we will conduct “class”**
While online courses afford great convenience, they also demand extra effort from both an instructor and students. Because there is no face time for lectures, discussions, group work, or other activities, all this must take place through the course site on Canvas. This involves extensive writing and creation of slides, videos, and other media we will use to communicate our ideas and questions. The syllabus, assignments, and many of the readings (unless available online) will be posted on Canvas. In each week I will provide slides or notes and brief “lectures” on important points (there are a few weeks of exception depending on the topic), but much of the work of the course will take place in the forums via discussion of the readings, videos, and slides, and your own work (discussion, assignments, quiz, and exercises).

**Technology requirements for online class**

Internet and computer access is required. Your Internet speed should sufficiently support uploading and downloading large file sizes. Your computer should be up-to-date with the latest operating system to support the required applications listed below; it should also have anti-virus software. The latter is especially important given the fact that we will be sharing files between ourselves.

**Internet access.** The most important component is a high-quality Internet connection. Cable Modem, DSL, ISDN or other high speed, broadband service is strongly recommended. Dial-up modems, while usable, will result in frustrating results during “live” conferencing or other multimedia activities. Using wireless connection when the signal is weak will cause similar frustrating results. Because this is a web-based class, students must have daily, reliable, high-speed Internet access.

**Basic computing requirements.** Students need to have access to a properly functioning computer throughout the semester that meet the following requirements:

- A Windows or Mac computer with an up-to-date browser (Safari, Chrome, or Firefox)
- Constantly up-to-date
- Unless otherwise noted, most modern computers have enough processing power (i.e., RAM) for this course
- The use of a tablet or mobile device will not give you all the functionality needed for the course; do not rely on such devices for a successful learning experience
- A current word processing software, such as the latest version of Word or Pages. Reminder: many software downloads are free to students at [https://iuware.iu.edu/](https://iuware.iu.edu/).
- Sound capability to listen to audio files
- Webcam for synchronous web conferencing sessions and/or video presentations
- Student computers need to be capable of running the latest versions of plug-ins, recent software and have the necessary tools to be kept free of viruses and spyware.

**Technical Assistance.** For help with Canvas technical issues or if you are having difficulty with any of the technology used for the course, check the materials at [https://kb.iu.edu/d/bcll](https://kb.iu.edu/d/bcll).
Course Site

We have access to Canvas course site. I will use this site as a way to post updates, store documents, receive assignments, and to accommodate online learning activities, among other things. It is your responsibility to review the course site multiple times a week.

Readings and Sources

Readings are on Canvas or links on the World Wide Web. It is expected that students will have read the materials every week, as we will be referring to them in lectures and in the exercises.

Required reading materials:
- No textbook is used in this class.
- Some readings are available online and URLs are offered in the agendas.
- Required readings have been selected to encourage participation in class discussion forums and assignments. All required and recommended readings are available on the Canvas worksite for S583.

Useful Resources (journals, conference proceedings, and professional organizations):
- International Journal of Digital Curation: http://www.ijdc.net/
- Journal of e-Science Librarianship: https://escholarship.umassmed.edu/jeslib/
- Data Science Journal: https://datascience.codata.org/
- IASSIST Quarterly: http://www.iassistdata.org/iq/issue/40/4
- Digital Curation Center (DCC): http://www.dcc.ac.uk/
- Research Data Alliance (RDA): https://www.rd-alliance.org/
- International Association for Social Science Information services & Technology (IASSIST): http://www.iassistdata.org/

Canvas

Canvas will be an integral part of S583. All course announcements will be found in Canvas along with the class syllabus, course schedule, exercises for grade, practice exercises, and other course documents.

Assignments and Grading

Grades will be based on class participation (including assigned tasks), discussion, and exercise with a series of assignments. All assignments are due every Tuesday midnight (11:59 pm). When requested, the responses to other students are due a day after (Wednesday midnight (11:59 pm))
1. Discussion 4 (4 point per each): 16 points
2. Reflection essay: 4 points
3. Data curation action exercise: 12 points
4. Data assessment exercise: 12 points
5. Storage checklist exercise: 10 points
6. Deposit practice examination: 11 points
7. Data in the news: 5 points
8. Tool analysis: 10 points
9. Final project: 20 points

Evaluation

The final letter grade will be assigned based on the following range with a total of 100 points possible:

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<tr>
<th>Score Range</th>
<th>Grade</th>
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<tr>
<td>96-100</td>
<td>A</td>
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<tr>
<td>90-95</td>
<td>A-</td>
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<tr>
<td>87-90</td>
<td>B+</td>
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<tr>
<td>84-86</td>
<td>B</td>
</tr>
<tr>
<td>80-84</td>
<td>B-</td>
</tr>
<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
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The meaning of the letter grades follows the DLIS 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 DLIS, 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:** Unsatisfactory work and inadequate understanding of course materials.

**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.

Note: The course instructor will issue the grade F if a student does not finish all required assignments.

A final grade of "I" or "Incomplete" will NOT be given except in extreme situations.

Inform the instructor if you are having difficulty completing the requirements of this course.

Late Submissions

In fairness to students who turn in assignments on time, late papers will be penalized. The earned grade will be lowered one grade level (e.g., from A- to B+) for each day that the assignment is late.

Important note on plagiarism and academic ethics

Unless otherwise specified in an assignment, all submitted work must be your own, original work. Any experts from the work of others must be clearly identified as a quotation, and a proper citation provided. Be aware of the IUPUI policy on plagiarism. All cases of plagiarism (unattributed quotation or paraphrasing) of anyone else's work, (e.g. from published materials) will be officially reported by academic misconduct. Indiana University and the Department of Library and Information Science policies on academic dishonesty will be followed.

See the source to learn more about

- Plagiarism: http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml
- Code of student rights, responsibilities, & conduct: http://studentcode.iu.edu/

Students found to be engaging in plagiarism, cheating, and other types of dishonesty will receive a failing grade for the course.

AES and Special needs

If you need an accommodation for a disability or have any other special need, please make an appointment to discuss this with me. I will be most able to address special circumstances if I know about them early in the semester. My office hours and contact information are listed at the beginning of this syllabus.

Accommodations will be made for qualified students with disabilities registered with Adaptive Educational Services. The AES office is located in Taylor Hall, UC 100. The phone numbers are 317/274-3241 or 317/278-2050 TTD/TTY, by fax 317/274-2051, or by email aes@iupui.edu.

Electronic Portfolio Participation
Students admitted to the DLIS, program beginning fall, 2011 and forward are required to participate in the electronic portfolio or ePortfolio system. In this site, you will upload materials from courses that address each of the MLS program goals. Talk to your instructor for guidelines and suggestions for submission of course work to this system.

**Online Writing Center**

The Online Writing Consulting is an experimental service that will allow you to meet with a writing center tutor in cyberspace if you are taking one of the selected online courses. [https://liberalarts.iupui.edu/uwc/pages/onlineconsulting-folder/index.php](https://liberalarts.iupui.edu/uwc/pages/onlineconsulting-folder/index.php)

**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 without contacting me, you will be administratively withdrawn from this section. 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](http://registrar.iupui.edu/withdrawal-policy.html)

**Course Overview at a Glance**

**Module 1. Overview of data, data practice, and data curation**
- Introduction to the course
- What are data? Research data?
- What is data curation?
- Why do we care? Who should care?

**Module 2. Data and its impact on our society**
- Role of data
- Data lifecycle; research data lifecycle
- Impact on our society

**Module 3. Open data, data sharing and reuse**
- Why data sharing and reuse?
- Obstacles of sharing and reuse
- Sharing policies
- Role of curation in sharing and reuse

**Module 4. Type, formats, and stages of data**
- Different data types and formats
- Disciplinary data
- Curation action associated with stages of data

**Module 5. Small data, big data, and curation approach**
• Data curation lifecycle
• Difference between big and small data
• Curation approaches for big and small data

Module 6. Data management plan (DMP) and policy
• What is DMP?
• Federal policy
• DMP requirements used to characterize and plan

Module 7. Data organization and documentation
• Data documentation
• Contextual information to make data meaningful
• Metadata
• Challenges

Module 8. Fall Break (No Fall break for Fall 2010 affected by Covid-19, see University Policy)
Module 9. Data provenance
• Concept of provenance

Module 10. Data storage, backup, preservation, and security
• Importance of data preservation
• Best practices for research data storage, backup, access control, migration to newer storage media, and security

Module 11. Data archives and repositories
• Types of available repositories/archives (discipline-based, institutional, etc.)
• Data ingest and manipulation in repository context (repository perspective)
• Understand process issues for depositing data in repository (sharer perspective)

Week 12. Intellectual property, copyright, and data licensing
• Data ownership considerations related to data sharing
• Publisher and licensing restrictions on re-use of data (difference between CC0, Public Domain, and OpenData Licenses)
• Ethical considerations related to data sharing

Module 13. Legal and ethical consideration
• Privacy levels for research data as required by potential funding agencies
• Confidentiality issue in data
• Ethical data reuse

Module 14. Technologies associated with data curation and management
• Persistent identification
• Unique identification of digital objects
• Digital Object Identifiers
• CrossRef
• Open Archives Initiative protocols OAI-PMH and OAI-ORE
• Research Objects and provenance
• Linked open data for data
• Namespaces, URLs, and versions of record

Module 15. Thanksgiving Break
Module 16. Roles of Informational professionals in data curation
• What’s the value of archives and libraries?
• What’s the role? How do they respond?
• New jobs

Appendix: IUPUI Syllabus Supplement (including Fall 2020 Covid-19 Policy)

COVID-19 Policy for Fall 2020
Indiana University is concerned for the health and well-being of the entire community. The nature of COVID-19 is such that each of our individual actions affects not only our personal well-being but also those of every other person with whom we interact or share a space. Given the fluidity of the current situation, students and faculty alike will need to be adaptable and flexible as events may occur that necessitate a change in the course schedule or mode of delivery. To minimize the disruption that might occur if a student falls ill or is unable to attend classes for some other legitimate reason, class materials must be made available electronically to students unless the nature of the work makes this impossible.

To keep the IUPUI community safe, it is expected that every member of this course acknowledges the following university guidelines.

Masks
All students are expected to sign the Student Commitment Form. Agreement to abide by the public health measures outlined in the form is a condition of physical presence on the campus this fall. Included in that commitment are requirements for wearing masks in all campus buildings and maintaining physical distancing in all campus buildings. Both are necessary classroom requirements that will help keep our community safe.

1. All students and instructors must arrive to class wearing a mask over their mouth and nose. If a student does not have a mask, the student must pick up a disposable mask (available throughout campus) before joining the class session.
2. If a student enters a class without wearing a mask, the student will be told by the faculty member that they must put one on.
3. If a student refuses to put on a mask after being instructed to do so, the instructor will request that the student leave the class and will file a Public Incident Report with the Office of Student Conduct in the Division of Student Affairs. If the student refuses to leave, the faculty member will end the class immediately, and file a Public Incident Report with the Office of Student Conduct in the Division of Student Affairs.

4. If a student comes to class without wearing a mask a second time and again refuses to put it on, the student will be told to leave and will be advised that they can only attend the online version of the course, if such option is available, for the remainder of the semester. The faculty member will again file a Public Incident Report with the Office of Student Conduct.

5. If the course is not available online, the student will be informed that the in-person course is the only option and they will be given one more opportunity to return to class and wear a mask.

6. If a student appears in class without a mask a third time the student will be administratively withdrawn from the course and will again be referred to the Office of Student Conduct. The student will not receive a refund of tuition or fees.

7. Students should check for additional syllabus guidelines regarding additional PPE for laboratory classes.

8. Students who have concerns about wearing masks for medical reasons should request an accommodation from Adaptive Educational Services. (Contact: aes@iupui.edu or 317-274-3241.)

Student Absences

Consistent with the Student Commitment Form, students unable to attend class due to COVID 19 policy or another serious illness will:

1. notify their instructor and follow campus guidelines regarding a safe return to campus;
2. not be penalized for class absences assuming they make up missed assignments in a timely fashion, in consultation with (and at the discretion of) the instructor; and
3. be provided reasonable accommodations to access all course materials and will be given the opportunity to complete missed assignments online as is practicable.

IUPUI Policy on Disability Accommodations

Students needing accommodations because of disability will need to register with Adaptive Educational Services (AES) and complete the appropriate forms issued by AES before accommodations will be given. The AES office is located in Taylor Hall, UC 100. You can also reach the office by calling 317-274-3241 or emailing aes@iupui.edu.

IUPUI Policy on Religious Holidays

IUPUI respects the right of all students to observe their religious holidays and will make reasonable accommodation, upon request, for such observances. Students seeking accommodation for religious observances must submit a request in writing to the course
instructor by the end of the second week of the semester and should use the Request for Course Accommodation Due to Religious Observance Form. More information is available in the IUPUI Policy on Religious Holidays.

**IUPUI Policy on Academic Integrity**

The IU Code of Student Rights, Responsibilities, and Conduct states that students must uphold and maintain academic and professional honesty and integrity; the code defines academic misconduct as any activity that tends to undermine the academic integrity of the institution. Students engaging in academic misconduct may therefore receive penalties from their course instructor and disciplinary action from the university. Policies against academic misconduct apply to all course-, department-, school-, and university-related activities. Academic misconduct may involve human, hard-copy, or electronic resources and includes but is not limited to the following: cheating, fabrication, plagiarism, interference, violation of course rules, and facilitating academic dishonesty. For definitions of these activities, visit the Definitions appendix on the Student Code website. For information on how faculty and students are expected to handle cases involving academic misconduct, visit Academic Misconduct on the Student Code website. Additional information about the rights and responsibilities of IU students is available in the Code of Student Rights, Responsibilities, & Conduct.

**IUPUI Policy on Sexual Misconduct**

What you should know about sexual misconduct: Title IX and IU’s Sexual Misconduct Policy prohibit sexual misconduct in any form, including sexual harassment, sexual assault, stalking, and dating and domestic violence. If you have experienced sexual misconduct, or know someone who has, the university can help.

If you are seeking help and would like to speak to someone confidentially, you can make an appointment with:

- Counseling & Psychological Services (CAPS) at 317-274-2548 (counseling services)
- Confidential Advocacy Resources at 317-274-5715 or saadv@iupui.edu
- IUPUI Student Health Center at 317-274-2274 (University Blvd. location) or 317-274-8214 (West Michigan St. location) (health and medical services)

It is also important that you know that Title IX and university policy require faculty to share any information brought to them about potential sexual misconduct with the campus Deputy Title IX Coordinator(s) or IU’s Title IX Coordinator to ensure that appropriate measures are taken and resources are made available. Protecting student privacy is of utmost concern, and information will only be shared with those that need to know to ensure the university can respond and assist.

Find more information about sexual violence, including campus and community resources on the IU’s Stop Sexual Violence website.

Other resources:
• Stop Sexual Violence: Resources for Employees
• Stop Sexual Violence: Frequently Asked Questions

IUPUI Non-Discrimination Policy

Indiana University prohibits discrimination on the basis of age, color, disability, ethnicity, sex, gender identity, gender expression, genetic information, marital status, national origin, race, religion, sexual orientation, or veteran status. If you feel like you have been discriminated against, please contact IUPUI’s Office of Equal Opportunity (OEO). OEO is located in Lockefield Village, LV 4443. You can reach the office by calling 317-274-2306.

IUPUI does not tolerate acts that are damaging to our safe, civil, and inclusive community—and neither should you. If you experience or witness an incident of bias, you should report it. For more information, see Student Incident Reporting.

Military Related Personnel Statement

IUPUI recognizes that National Guard Members, Reservists, veterans and active duty military personnel have special circumstances such as upcoming deployments, drill requirements, disabilities, and required veterans affairs health appointments. Students are encouraged to communicate any military related obligations that affect their educational pursuit, in advance if possible, to the instructor.

The Office for Veteran and Military Personnel (OVMP) is committed to serving all the needs of our military related student population including but not limited to providing advice, guidance, advocacy, and services assisting in the transition from military life. If you are a student Veteran, National Guardsman, Reservists, Active Duty Member or a military dependent and need any assistance with your transition, please contact the OVMP by visiting the Campus Center, Room 268, emailing gibenefi@iupui.edu, or phoning 317-278-9163. Thank you for your service.

Two-Step Login (Duo)

IUPUI students are required to enroll in Two-Step Login (Duo) to gain access to sensitive documents and Canvas using IU login credentials. The security of student information is critical. Be sure to bring your primary device (like a cellphone or tablet) to class, so you can log in to secure IU systems. Also, make sure you have a backup device like a hardware token or Google Voice. If you get stuck without a working device, the UITS Support Center can give you a bypass code, but you will need to verify your identity.

To learn more about or get help with two-step login, consult the following resources:

• Help for Two-Step Login (Duo)
• Two-Step Login (Duo) device recommendations
• Contact your campus IT Support Center (for locations of UITS Support Centers and phone numbers and a chat feature).