LIS S604 Data Curation and Management
Department of Library and Information Science
Indiana University School of Informatics and Computing, IUPUI

Fall 2018 Syllabus (last update on Aug 1, 2018)

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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
Upon completion of this course, students will
1. Assess the need for long-term data curation in public and private venues, its benefits, and limitations. (5)
2. Conceptualize data curation activities and terms. (4)
3. Analyze the characteristics of various data types generated and used by a variety of disciplines, subdisciplines, research communities, and government organizations. (4)
4. Apply theoretical understanding to practical issues in data curation. (3, 6)
5. Analyze the activities associated with each stage of the data curation lifecycle and their social, legal, ethical, and policy implications. (4)
6. Evaluate existing data curation tools and technologies to create a solution to different curation issues in the real-world context by applying data curation concepts, terms, and theories. (5)
7. Analyze critical issues associated with the storage, backup, and security of data to create a solution. (4,6)
8. Analyze new roles and responsibilities for data curators in many sectors. (4)
9. Create a data preservation and management plan. (6)

MLS Program Outcomes
Develop and Manage Collections of Information Resources
- Manage, evaluate, and preserve physical and virtual collections of information resources
- Uphold ethical and legal standards in acquiring, leasing, preserving, and providing access to information resources
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 de-selection.
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).

**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):**

• Research Data Curation Bibliography by Charles W. Bailey, Jr.: [http://digital-scholarship.org/rdcb/rdcb.htm](http://digital-scholarship.org/rdcb/rdcb.htm)
• Journal of e-Science Librarianship: [https://escholarship.umassmed.edu/jeslib/](https://escholarship.umassmed.edu/jeslib/)
• Data Science Journal: [https://datascience.codata.org/](https://datascience.codata.org/)
• IASSIST Quarterly: [http://www.iassistdata.org/iq/issue/40/4](http://www.iassistdata.org/iq/issue/40/4)
• Digital Curation Center (DCC): [http://www.dcc.ac.uk/](http://www.dcc.ac.uk/)
• Research Data Access & Preservation Summit (RDAP): [https://www.asist.org/rdap/](https://www.asist.org/rdap/)
• Research Data Alliance (RDA): [https://www.rd-alliance.org/](https://www.rd-alliance.org/)
• International Association for Social Science Information services & Technology (IASSIST): [http://www.iassistdata.org/](http://www.iassistdata.org/)

Canvas
Canvas will be an integral part of S604. If you have problems accessing Canvas, please contact the University Information Technology Services (UITS) Support Center at 317-274-HELP. 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 Wednesday midnight (11:59 pm)](http://www.dcc.ac.uk/)

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:

<table>
<thead>
<tr>
<th>96-100 = A</th>
<th>83-86 = B</th>
<th>73-75 = C</th>
</tr>
</thead>
<tbody>
<tr>
<td>91-95 = A-</td>
<td>79-82 = B-</td>
<td>69-72 = C-</td>
</tr>
<tr>
<td>87-90 = B+</td>
<td>76-78 = C+</td>
<td>Below 68 = F</td>
</tr>
</tbody>
</table>
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+, 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.

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

**Key date for Fall 2018**

Sunday, August 26. End of the 100% Refund period
Sunday, October 21. Last day to withdraw from courses.
Monday, October 22. Start of Priority Registration.

Course Overview at a Glance

Week 1. (Aug 20-22) 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?

Week 2. (Aug 23-29) Data and its impact on our society
- Role of data
- Data lifecycle; research data lifecycle
- Impact on our society

Week 3. (Aug 30-Sep 5) 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

Week 4. (Sep 6-12) Type, formats, and stages of data
- Different data types and formats
- Disciplinary data
- Curation action associated with stages of data

Week 5. (Sep 13-19) Small data, big data, and curation approach
- Data curation lifecycle
- Difference between big and small data
- Curation approaches for big and small data

Week 6. (Sep 20-26) Data management plan (DMP) and policy
- What is DMP?
- Federal policy
- DMP requirements used to characterize and plan

Week 7. (Sep 27-Oct 3) Data organization and documentation
- Data documentation
- Contextual information to make data meaningful
- Metadata
- Challenges

Week 8. (Oct 4-10) Data provenance
- Concept of provenance

Week 9. (Oct 11-17) Fall Break

Week 10. (Oct 18-24) 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

Week 11. (Oct 25-31) 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 (sharee perspective)

Week 12. (Nov 1-7) 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

Week 13. (Nov 8-14) Legal and ethical consideration
- Privacy levels for research data as required by potential funding agencies
- Confidentiality issue in data
- Ethical data reuse

Week 14. (Nov 15-23) Thanksgiving Break

Week 15. (Nov 26-28) 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

Week 16. (Nov 29-Dec 5) 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

**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 > Responsibilities > Academic Misconduct* at [http://www.indiana.edu/~code/](http://www.indiana.edu/~code/). All students must also successfully complete the Indiana University Department of Education “How to Recognize Plagiarism” Tutorial and Test. [https://www.indiana.edu/~istd](https://www.indiana.edu/~istd) 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*). To detect plagiarism instructors apply a range of methods, including Turnitin.com. [http://www.ulib.iupui.edu/libinfo/turnitin](http://www.ulib.iupui.edu/libinfo/turnitin)
Academic Misconduct:

1. **Cheating:** Cheating is 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:
      1. directly quoting another person’s actual words, whether oral or written;
      2. using another person’s ideas, opinions, or theories;
      3. paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
      4. borrowing facts, statistics, or illustrative material; or
      5. offering materials assembled or collected by others in the form of projects or collections without acknowledgment

4. **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 to deprive others of the information they contain.

5. **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.

6. **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:** Students must participate in all class discussions and conscientiously complete all required course activities and/or assignments. If a student is unable to attend, participate in, or complete an assignment on time, the student must 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 occurs after the full refund period, and a student who has been administratively withdrawn is ineligible for a tuition refund.

2. **Civility:** To maintain an effective and inclusive learning environment, it is important to be an attentive and respectful participant in lectures, discussions, group work, and other classroom exercises. Thus, unnecessary disruptions should be avoided, such as ringing cell phones, engagement in private conversations, and other unrelated activities. Cell phones, media players, or any noisy devices should be turned off during a class. Texting, web surfing, and posting to social media are generally not permitted. Laptop use may be permitted if it is used for taking notes or conducting class activities. Students should check with the instructor about permissible devices in class. 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 other classroom visitors, 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 classroom-based courses, the instructor or teaching assistant should respond to emails by the end of the next class or, for online courses, within two Indiana University working days, which excludes weekends and holidays. The instructor should provide weekly office hours or accept appointments for face-to-face, telephone, or teleconferenced meetings, and announce periods of extended absence in advance.

4. **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 http://life.iupui.edu/caps/.

5. **Course evaluations**: Course evaluations provide vital information for improving the quality of courses and programs. Students are urged to complete one course and instructor evaluation for each section in which they are enrolled at the School of Informatics and Computing with the following exceptions: (a) The student has withdrawn from the course; (b) fewer than five students are enrolled in the section (in which case maintaining anonymity is difficult); and (c) the section is a laboratory that must be taken with a course having a different section number. Course evaluations are completed at https://soic.iupui.edu/app/course-eval/. Course evaluations are typically 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. In small sections, demographic information should be left blank, if it could be used to identify the student.

6. **Disabilities policy**: All qualified students enrolled in this course are entitled to reasonable accommodations for a disability. Notify the instructor during the first week of class of accommodations needed. Students requiring accommodations register with Adaptive Educational Services (AES) and complete the appropriate AES-issued before receiving accommodations. The AES office is located at UC 100, Taylor Hall (Email: aes@iupui.edu, Tel. 317 274-3241). For more information visit http://aes.iupui.edu.

7. **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.

8. **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 http://protect.iu.edu/emergency.

9. **IUPUI course policies**: Several campus policies governing IUPUI courses may be found at the following link: http://registrar.iupui.edu/course_policies.html

10. **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. http://registrar.iupui.edu/official-enrollment-class-attendance.html Children may not attend class with their parents, guardians, or childcare providers.

11. **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 http://registrar.iupui.edu/religious.html.

12. **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.

13. **Sexual misconduct**: IU does not tolerate sexual harassment or violence. For more information
and resources, visit http://stopsexualviolence.iu.edu/.

14. **Student advocate**: The Student Advocate 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 http://studentaffairs.iupui.edu/advocate.