IUPUI

SCHOOL OF INFORMATICS AND COMPUTING

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

Indiana University–Purdue University Indianapolis

LIS S201
Foundations of Data Studies
COURSE SYLLABUS – FALL 2019

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Course Overview

OFFICIAL CATALOG DESCRIPTION:

This class introduces digital literacies, focusing on data and information literacy in the media, civic engagement, business, informatics, and data science. Students explore the production of data; their roles as data creators and consumers; and the effects of data practices on society. Students apply their acquired skills in real-world situations.

EXTENDED COURSE DESCRIPTION:

This course emphasizes the value of data in society and provides students the opportunity to learn basic data concepts and skills. Students will gain an understanding of key factors for data studies including data sources, data ethics, data policy, data evaluation, data manipulation, and data visualization. Additionally, students will gain valuable hands-on experience working with data.

This course is a required course for the Data Studies Minor and Applied Data and Information Science Major curriculum and provides students the basic knowledge they must acquire to be prepared for the more specialized and elective courses offered in this program.

PREREQUISITES

None

REQUIRED TEXTS:

- Herzog, D. (2015). *Data literacy: A user's guide*. SAGE Publications: Los Angeles, CA.
- Evergreen, S. (2017). *Effective data visualization: The right chart for the right data*. SAGE Publications: Los Angeles, CA.

- Data Journalism Handbook: http://datajournalismhandbook.org/1.0/en/index.html
- Additional readings as assigned

EQUIPMENT NEEDED:

A reliable computer running Windows, Mac OS, or Linux operating system. Please visit http://informatics.iupui.edu/technology/laptop for information on the Laptop Initiative for Informatics majors.

For PC users, you need to have the most recent version of Firefox or Chrome. For Mac users, you need to have the most recent version of Safari, Firefox, or Chrome.

To successfully complete this course, students must:

- Have adequate computing skills, including but not limited to the use of Microsoft Office suite or equivalent to process, save, and retrieve documents.
- Learn how to submit your assignments using Canvas.

TECHNOLOGY SUPPORT

For Canvas questions please see the "Help" tool on the left side of every page and check the UITS Knowledge Base (KB) for more information (type “Canvas" in the KB search box for a full list of Canvas-related topics).

If you have questions about or issues with any of the technology used in this course please contact the University Information Technology Services (UITS) support team. You can contact the support team in the following ways:

- Call 317-274-4357
- Email ithelp@iu.edu
- Live Chat
- If you are on campus, you can walk in at ICTC 129

NETIQUETTE

One thing to always keep in mind when taking an online course is that the others with which you interact throughout the semester - including your facilitators - are human beings and worthy of respect. The first rule of netiquette is to "**remember the human**" when you are communicating with us or with your peers. When everyone works together in a professional and collegial manner it creates a more positive experience for all.

The second rule is to "adhere to the same standards of behavior online that you follow in real life." It's not likely that you would yell at, mock, belittle, bully, or harass another student in (or outside of) a face to face class, so please don't do it here either. The feeling of anonymity that some people have when they are online can lead to those sorts of behaviors but they are not acceptable here or in any other online class. To help make sure your text comments are received in the manner you meant, please feel free to use emoticons such as :-) or ;-) or ¯_(ツ)_/¯ if you think your humor may be taken as serious. :-)

Please take a few minutes before we begin and review all the Core Rules of Netiquette.

COURSE SITE:

We have access to a Canvas course site (https://canvas.iu.edu/). I will use this site as a way to post updates, store documents, receive assignments, and to accommodate online learning activities. These activities will include weekly video lectures, reading assignments, discussions, and homework. It is your responsibility to review the course site multiple times a week.

LEARNING OUTCOMES

Upon completion of this course students will	RBT*	PLUS **	Assessment
Recognize that data can have value and play a key role in society by providing opportunities to grow knowledge, to innovate, and to influence.	3	P2.1, P2.3, P4.3, P4.4	A1, A4, Paper, Quizzes
Identify sources of data to evaluate news and other information.	1	P2.3	A1, A4, Paper, Quizzes
Analyze datasets in context to determine the reliability of the information including potential bias in data collection or representation.	4	P2.3	A2, A3, Quizzes
Understand the ethical guidelines and implications for using, managing, and communicating data.	2	P4.3, P4.4	A1, A4, Paper, Quizzes
Examine results produced in data analysis using data visualizations that are suitable for their purpose and targeted audience.	4	P2.1, P2.3	A4, A5, Presentation, Quizzes

* RBT: Revised Bloom's Taxonomy.
** PLUS: Profiles of Learning for Undergraduate Success

PROFILES OF LEARNING FOR UNDERGRADUATE SUCCESS (PLUS):

- P2.1 Problem Solver – Thinks Critically
- P2.3 Problem Solver – Analyzes, Synthesizes, And Evaluates
- P4.4 Community Contributor – Anticipates consequences
- P4.3 Community Contributor – Behave ethically

LEARNING ASSESSMENTS

This table provides a brief summary of the assignment names, due dates, and grade distribution. A fuller description for each assignment follows the table.

Assignment	Module	Percent/Points
Introduce Yourself and Meet your peers	Introductory Module	1% (1 Point)

Syllabus Quiz	Introductory Module	1.5% (1.5 Points)
Quizzes	Modules 2, 3, 4, 7, 8, 9, 10, 12, & 15	22.5% (2.5 Points each x 9)
Online Forum Participation	Module 1, 2, 9, & 14	10% (2.5 Points each x 4)
Assignments	A1 – Module 4 A2 – Module 5 A3 – Module 6 A4 – Module 11 A5 – Module 14	35% (35 Points)
Data Ethics Paper	Module 10	15% (15 points)
Visualization Presentation & Paper	Finals Week	15% (20 points)
Total		**100% (100 points)**

QUIZZES (22.5%)

Quizzes serves as tool for learning and assessment in this course, which is why it is collectively worth 22.5 percent of your total grade. This course requires you to deeply engage data concepts and practices, and these concepts and practices build on each other. It is imperative that you engage with each week's quiz carefully and purposefully.

Structurally, the quizzes will be administered via Canvas and will be submitted through Canvas. Each quiz is worth 2.5 points each. Questions will range from simple true/false, matching, short essays, and hands-on exercises.

ONLINE DISCUSSION PARTICIPATION (10%)

Throughout the semester you will be exploring topics and readings through online discussion forums. You are expected to participate in the discussion forum by offering ideas, including your own thoughts as well as pulling from sources outside of the class readings, and interacting with your fellow classmates through the discussion forum. To participate in the online discussion I will provide a prompt and/or question of what should be discussed.

ASSIGNMENTS

ASSIGNMENT 1 (A1): EXPLORING ONLINE DATA SOURCES (5%)

Throughout Chapters 1–4 of the textbook a number of online data sources have been described and discussed. Particularly, Chapters 3 and 4 describe multiple places where you can download data.

For this assignment, you will explore a data source and considerations of these data by the

following:

- Find a data source you are interested in and download the data.
- Explore the data and consider what types of questions this data can answer, what is it useful for, who is its audience.
- Examine the data and determine the potential technical considerations. Describe both its positive qualities and negative qualities.

Submitted via Canvas.

ASSIGNMENT 2 (A2): DATA INTEGRITY CHECK (10%)

Download a copy of the 2014 disbursements files for the US Senate candidates in your state from the FEC Data Portal and run integrity checks learned in Chapter 6. Keep a data notebook. What problems do you see with the data? How would these problems impair your analysis?
Submitted via Canvas.

ASSIGNMENT 3 (A3): DATA MANIPULATION (7.5%)

This will be a laboratory activity to give you some experience with data manipulation.
Submitted via Canvas.

ASSIGNMENT 4 (A4): DATA JOURNALISM CASE STUDIES (5%)

You will be assigned a Case Study from the Data Journalism Handbook. You will provide a 2-3 page analysis of the case study focusing on audience, data, data ethics and privacy consideration, the story the data told. What could have provided a better story? Pros/cons of the case study.
Submitted via Canvas.

ASSIGNMENT 5 (A5): VISUALIZATION PRACTICE (5%)

In this assignment you will use Google Fusion Tables to practice creating charts.

DATA ETHICS PAPER (15%)

Consider the following topics: data evaluation, data integrity, data manipulation, data privacy, and flawed assumptions of data. Write a 4–5-page paper exploring these topics. 3–5 citations, APA style guidelines.
Submitted via Canvas.

VISUALIZATION PRESENTATIONS & PAPER (15%)

Throughout the course we have identified various places you can find data sources, additionally, we have investigated techniques for visualization of data. For this presentation, you will find a source of data you want to visualize and tell a story. You will present at least four visualizations of your data and discuss the pros and cons of the various visualization styles for telling your data story. Additionally, you will discuss the tool you used to create your visualizations. You will have 5 minutes in class to present your work and a 2-page write-up of your techniques.

Submitted via Canvas.

EXPECTATIONS, GUIDELINES, AND POLICIES

ATTENDANCE

A basic requirement of this course is that you will participate in all online activities and conscientiously complete all required course activities and assignments.

INCOMPLETE

The instructor may assign an Incomplete (I) grade only if at least 75% of the required coursework has been completed at passing quality and holding you to previously established time limits would result in unjust hardship to you. All unfinished work must be completed by the date set by the instructor. Left unchanged, an Incomplete automatically becomes an F after one year. For information on incompletes visit the website, https://studentcentral.iupui.edu/grades-progress/incompletes.html.

LATE WORK

You are responsible for completing each deliverable (e.g., assignment, homework) by its deadline and submitting it by the specified method. Deadlines are outlined in the syllabus or in supplementary documents accessible through Canvas. In fairness to the instructor and students who completed their work on time, a grade on a deliverable shall be reduced 10%, if it is submitted late and a further 10% for each 24-hour period it is submitted after the deadline.

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 the website http://www.indiana.edu/~code/. All students must also successfully complete the Indiana University Department of Education "How to Recognize Plagiarism" Tutorial and Test at the website 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. To learn more about Turnitin visit the website, http://www.ulib.iupui.edu/libinfo/turnitin.

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:

        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 so as 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. **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/.

4. **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.

5. **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.

6. **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.

7. **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.

8. **IUPUI course policies:** A number of campus policies governing IUPUI courses may be found at the following website https://studentcentral.iupui.edu/register/index.html

9. **Religious holidays:** Students seeking accommodation for religious observances may submit a request form to the course instructor by the end of the second week of the semester. For information visit the website, https://studentcentral.iupui.edu/calendars/holidays/course-accommodation-form.html.

10. **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.
11. **Sexual misconduct:** IU does not tolerate sexual harassment or violence. For more information and resources, visit http://stopsexualviolence.iu.edu/.
12. **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.

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.

GRADING SCALE

Grades will be assigned based on the IUPUI grading scale.

- A+ 97–100% Professional level work, showing highest level of achievement

- A 93–96.99% Extraordinarily high achievement, quality of work; shows command of the subject matter
- A– 90–92.99% Excellent and thorough knowledge of the subject matter
- B+ 87–89.99% Above average understanding of material and quality of work
- B 83–86.99% Mastery and fulfillment of all course requirements; good, acceptable work
- B– 80–82.99% Satisfactory quality of work
- C+ 77–79.99% Modestly acceptable performance and quality of work
- C 73–76.99% Minimally acceptable performance and quality of work
- C– 70–72.99% Unacceptable work (Core course must be repeated for credit)
- D+ 67–69.99% Unacceptable work (Course must be repeated for credit)
- D 63–66.99% Unacceptable work
- D– 60–62.99% Unacceptable work
- F Below 60 Unacceptable work

No credits are granted for a grade below C.

SEMESTER STRUCTURE

OVERVIEW:

Structurally, this course covers sixteen weeks. Fourteen of those weeks included substantive content; three weeks account for the intro to the course, Thanksgiving Week, and finals week. The semester has been broken down into three thematic units with their own interconnected modules. There is a new module each week. Each module iteratively builds on those that came before it.

Make special note that each week begins on Tuesday at 12:00 AM and ends on the following Monday at 11:59 PM. I break it up this way to put Saturday and Sunday right in the middle of the week, which has proven time and again to 1) reduce last-minute participation during the week, 2) create stronger connections between students, and 3) enable students to produce higher quality work.

SEMESTER GRID AND MODULE BREAKDOWN

Week/Module	Start Date	End Date
Introduction to the Course Module	Tuesday, August 27th	Monday, September 2nd
Module 1: Introduction to Data Foundations	Tuesday, September 3rd	Monday, September 9th
Module 2: Data Basics	Tuesday, September 10th	Monday, September 16th

Module 3: Finding Data	Tuesday, September 17th	Monday, September 23rd
Module 4: Evaluating Data	Tuesday, September 24th	Monday, September 30th
Module 5: Data Integrity Check	Tuesday, October 1st	Monday, October 7th
Module 6: Data Manipulation	Tuesday, October 8th	Monday, October 14th
Module 7: Introduction to Data Ethics	Tuesday, October 15th	Monday, October 21st
Module 8: Data Ethics and Privacy	Tuesday, October 22nd	Monday, October 28th
Module 9: Bad and Flawed Data	Tuesday, October 29th	Monday, November 4th
Module 10: Data Journalism Part 1	Tuesday, November 5th	Monday, November 11th
Module 11: Data Journalism Part 2	Tuesday, November 12th	Monday, November 18th
Module 12: Introduction to Visualization	Tuesday, November 19th	Monday, November 25th
Module 13 – Thanksgiving Break – No Class	***Tuesday, November 26th***	***Monday, December 2nd***
Module 14: Visualization Part 2	Tuesday, December 3rd	Monday, December 9th
Module 15: Last Week of Class – Review	Tuesday, December 10th	Monday, December 16th
Finals Week	Tuesday, December 17th	Sunday, December 22nd