ILLINOIS
School of Information Sciences

Computing in the Humanities
IS310-B CRN: 78292
Fall 2023
Monday/Wednesday, 2:00 – 3:20 PM, School of Information Sciences (501 E. Daniel Street, Champaign, IL), Room 12A
Course meets 2 times per week for 1:20 minutes

Instructor: Wenyi Shang
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Office Hours: by appointment
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Preferred contact method: face to face and by email

Course Description
This advanced undergraduate course explores the use and application of emerging technology and methods in scholarly activity in the humanities. Using the Python programming language, the main part of the course is organized around method-driven weekly topics, including data collection, data visualization, spatial analysis, text encoding, network analysis, machine learning, and text analysis, among others. Additionally, the course covers conceptual themes such as debates and critiques surrounding digital humanities and examines how computational methods contribute to established humanities disciplines such as literature and history, as well as adjacent disciplines in the social sciences.

The course adopts a comprehensive approach, blending lectures, seminars, and labs. Through engaging readings, dynamic class discussions, programming assignments, and a semester project, students gain a comprehensive overview of the research field of computing in the humanities. They also acquire hands-on experience in utilizing Python for data analysis, especially in the context of humanities topics. Moreover, students are exposed to the entire lifecycle of conducting research on a self-defined topic in computing in the humanities.

Pre- and Co-requisites
Sophomore standing

3 Credit hours

Student Learning Outcomes
Upon completion of this course, students will:
- Understand how emerging technologies contribute to humanities research
- Utilize Python effectively for data analysis, especially in the context of humanities topics

- Demonstrate creative skills in proposing, conducting, and presenting a research project, which can be applied to real-life issues
- Acquire a better understanding on the interdisciplinary nature of information science and its potential integration in various areas

Course Context

This course meets a number of learning outcomes connected to program objectives for the BSIS program, which in turn connect to larger iSchool and University of Illinois learning goals.

Program Learning Outcomes
- Equip students to be leaders in a knowledge society and innovators in a knowledge economy
- Provide an interdisciplinary education where studies in fundamentals of information sciences and in application areas are fully integrated
- Provide a program with enough flexibility to facilitate transfers into the major at the sophomore level, transfer across colleges at the sophomore and junior level, and transfers from two-year colleges
- Prepare interested students for graduate study in information sciences and related fields

iSchool Goal
This course meets the following goal:
- Maintain global leadership in education for the information professions

University of Illinois Campus-Wide Learning Goals
This course meets the following goals:
1. Intellectual Reasoning and Knowledge
2. Creative Inquiry and Discovery
3. Social Awareness and Cultural Understanding
4. Global Consciousness

Course Materials

Weekly Reading Assignments:
Each week, two reading assignments will be shared on Canvas, one required and the other recommended. For specific readings assigned each week, please refer to the "IS310B Fall 2023 Schedule" document.

Additional Recommendations:
In addition to the weekly reading assignments (consisting of articles or book chapters), the following three books are also recommended for further exploration:
For a comprehensive overview of digital humanities: Schreibman, S., Siemens, R., & Unsworth, J. (2016). *A New Companion to Digital Humanities*. John Wiley & Sons, Ltd. (Available online)
For the latest version of scholarly debates related to digital humanities: Gold, M. K., & Klein, L. F. (2019). *Debates in the Digital Humanities 2019*. University of Minnesota Press. (Available online)

For a notable example of adopting digital methods in humanities studies: Underwood, T. (2019). *Distant Horizons: Digital Evidence and Literary Change*. The University of Chicago Press. (Available on reserve at the university library)

Bio of Instructor

Wenyi Shang (he/him) is a fifth-year Ph.D. candidate ("all but dissertation") in the School of Information Sciences at the University of Illinois Urbana-Champaign. Prior to joining the University of Illinois, he earned a bachelor's degree in information management at Peking University, China.

Working with his advisor, Professor Ted Underwood, his research centers on exploring diverse forms of humanities data, ranging from large-scale literary texts and historical documents to relational databases and bibliographic metadata. By employing computational methods such as text mining, machine learning, and social network analysis, he aims to address various humanities inquiries, particularly those related to history and literature.

He has contributed as a first author to 9 peer-reviewed journal articles (5 in English) and 8 peer-reviewed conference articles (all in English) in esteemed digital humanities and information science venues: *Digital Humanities Quarterly*, *Journal of Historical Network Research*, *Cataloging and Classification Quarterly*, *Digital Humanities Conference*, *JCDL*, *iConference*, among others.

He has served as a TA in courses including IS310 Computing in the Humanities, IS455 Database Design and Prototyping (University of Illinois Urbana-Champaign), Information Organization, Information Storage and Retrieval, and History of Chinese Books (Peking University). He has also served as a workshop instructor in the Historical Network Research in Chinese Studies conference (Harvard University).

Assignments and Methods of Assessment

Grade Assessment Distribution:

- Participation and discussions on reading assignments: 30%
- Weekly programming assignments: 30%
- Semester project: 40%

There is no final exam for this course.

Participation and discussions on reading assignments:

The first session of each week typically takes the form of a seminar. Before each seminar, a required reading and a recommended reading will be assigned. You are expected to post a short response (100–200 words) in the discussion forum to the required article, sharing aspects you found interesting and/or any questions you have. While you are more than welcome to share your thoughts about the recommended reading as well (and they will be discussed in class if we have time), the grading will be based exclusively on the response to the required article.

You are also expected to actively participate in the in-class discussion during the seminars. The grades will be based on both in-class participation and the reading response. In case of an emergency preventing your participation in a seminar, please contact the instructor before the class. With the instructor's agreement, you may write a longer response (600–1,000 words) to be eligible to receive a full grade for that particular session. If you contact the instructor after missing the class, a longer response may still be accepted, but it will be graded with a penalty.

There will be two guest lectures throughout the semester. On such occasions, you are expected to post both a short response (100–200 words) to the assigned reading and a reflection on the guest lecture (500–800 words). The reflection should include a summary of the lecture and any interesting observations made during the session. You are particularly encouraged to include interactions you had with the guest lecturer during the in-class discussion.

The "participation and discussions on reading assignments" grades will be based on 11 seminars (in-class participation and reading response) and 2 guest lectures (reflection to the guest lecture and reading response). Each session is worth 2.5% of the final grade, and the 12 sessions out of the total 13 sessions with the highest grades will be counted to create some flexibility for students.

Weekly programming assignments:
The second session of each week typically takes the form of a lab. Participation will require you to bring your own laptop computer to class. During each lab session, the instructor will share a Jupyter notebook and guide the class through the specific topic of the session, providing additional tasks to be completed. You are expected to complete these tasks and submit the notebook as the weekly programming assignment submission.

It is anticipated that most students will be able to finish the assignment during the lab session itself, but submission will remain open for an additional two days. Late submissions will not be given full grades unless the student has contacted the instructor prior to the due date of the assignment (or in the case of emergencies, as soon as practicable).

The "weekly programming assignments" grades will be based on 12 assignments, each of which is assigned during a lab session. Each assignment is worth 2.5% of the final grade.

Semester project:
The goal of this project is to familiarize you with the process of computing in the humanities research. You will have the opportunity to select a research topic related to the humanities and relevant datasets. Leveraging your Python skills and your knowledge gained from the course's weekly reading assignments, you will experience the entire lifecycle of a project, from planning the project and collecting data to analyzing and communicating your results, and finally reflecting and outlining future directions.

The formation of groups and initial topic selection (due September 15th) requires each group to post a paragraph in the discussion forum describing the members in your group and the research topic you plan to explore. Group sizes are expected to be 2–3 people. If you prefer to work individually or in a larger group, please contact the instructor (the larger the group, the more work is expected to be completed for the project to receive the same grade). Early posting in the discussion forum to find teammates is encouraged. Providing a brief description of your idea can facilitate the formation of teams with shared interests.

The project proposal (1–2 pages, due September 29th) should be a combination of outlining your proposed focus for the final project, outlining the work you propose to undertake, and explaining your initial goals of this project in relation to the reading assignments and topics discussed in class. This proposal will serve as the blueprint for your research in the upcoming weeks.

The project progress presentation (October 25th) will demonstrate your project and explain how much you have completed from the initial proposal. Feedback from the instructor and your peers will help you assess your progress and determine if any adjustments or revisions are necessary. After the presentation, you are also expected to provide constructive feedback to at least two

other groups in the discussion forum. Your grade for this step will be based on both the presentation and the feedback provided.

The project progress report (3–5 pages, due November 3rd) will be based on your project progress presentation. You are expected to incorporate feedback received during the presentation and in the discussion forum.

The final presentation (December 4th and December 6th) should present a narrative structured around your research question(s). You will also be responsible for providing a grade for each of the other groups' presentations. Students' evaluations and the instructor's evaluation will each count for 50% of the overall evaluation for this step. Failure to provide grades will result in a penalty for your own grade in this step.

The final project report (8–12 pages, due December 15th) will be based on your final presentation. You are expected to incorporate feedback received during the presentation.

The "semester project" grades will be based on the following components: project proposal (4%), project progress presentation (8%), project progress report (4%), final presentation (8%), and final project report (16%).

Incomplete Grades
An exceptional request for an incomplete grade is most often granted to students encountering a medical emergency or other extraordinary circumstances beyond their control. Students must request an incomplete grade from the instructor. The instructor and student will agree on a due date for completion of coursework. The student must submit an Incomplete Form signed by the student, the instructor, and the student's academic advisor to the front office:
https://uofi.app.box.com/v/ISIncompleteForm
Please see the Student Code for full details: http://studentcode.illinois.edu/article3/part1/3-104/

Grading Scale
94-100 = A
90-93 = A-
87-89 = B+
83-86 = B
80-82 = B-
77-79 = C+
73-76 = C
70-72 = C-
67-69 = D+
63-66 = D
60-62 = D-
59 and below = F

Attendance/Participation Policy
The iSchool expects students to attend all classes except in cases of emergency. Student Code on Attendance: http://studentcode.illinois.edu/article1/part5/1-501/
Enrollment in this course includes expectation of regular attendance. If you find you must miss (or have missed) class, contact the instructor as soon as possible. The attendance will be directly reflected in the "participation and discussions on reading assignments" grade, and repeated unexcused absence may incur additional penalties, resulting in the final grade being

lowered by step(s) (for example, an A- could become a B+ or B). Repeated tardiness or leaving sessions early may be considered an unexcused absence unless alternate arrangements have been made with the instructor.

Academic Integrity
General notes:
The iSchool has the responsibility for maintaining academic integrity so as to protect the quality of education and research in our school and to protect those who depend on our integrity. Consequences of academic integrity infractions may be serious, ranging from a written warning to a failing grade for the course or dismissal from the University. See the student code for academic integrity requirements: http://studentcode.illinois.edu/article1/part4/1-401/

Using of others' works:
If, in the course of your writing, you use the words or ideas of another writer, proper acknowledgement must be given (preferably using APA style).

Using of AI writing tools:
This course maintains a policy that you may use AI writing tools to assist you in the writing process but that all artificially generated text needs to be explicitly labeled. In handling in your semester project essay and responses to the assigned readings, you need to disclose the extent to which you used ChatGPT or other AI writing tools in your work. All text written by AI must be quoted with the source of the model in parentheses (e.g., ChatGPT). At the end of your work, please include the following statement: "This work used (did not use) AI for the following components of the writing process: (choose none to three of the following: brainstorming, editing, sentence generation)."

Statement of Inclusion
As the state's premier public university, the University of Illinois at Urbana-Champaign's core mission is to serve the interests of the diverse people of the state of Illinois and beyond. The institution thus values inclusion and a pluralistic learning and research environment, one which we respect the varied perspectives and lived experiences of a diverse community and global workforce. We support diversity of worldviews, histories, and cultural knowledge across a range of social groups including race, ethnicity, gender identity, sexual orientation, abilities, economic class, religion, and their intersections.

Religious Observances
In keeping with our Statement of Inclusion and Illinois law, the University is required to reasonably accommodate its students' religious beliefs, observances, and practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements.
If you anticipate the need for an accommodation, please communicate with your instructor in the first two weeks of class. If you are an undergraduate student and your instructor requires an absence letter, you must fill out the Religious Observance Accommodation Request form: https://odos.illinois.edu/community-of-care/resources/students/religious-observances/
Other accommodations may also be available.

Accessibility Statement

To obtain accessibility-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TTY), or e-mail a message to disability@illinois.edu.

Week-by-Week Topic and Assignment Schedule
August 21: Introduction (Lecture)
Session 1 of Week 1 (1st class meeting overall)

August 23: Python Basics (Lab)
Session 2 of Week 1 (2nd class meeting overall)

August 28: Digital Literary Studies (Seminar)
Session 1 of Week 2 (3rd class meeting overall)

Required reading: Kirschenbaum, M. (2012). What Is Digital Humanities and What's It Doing in English Departments? In M. K. Gold (Ed.), *Debates in the Digital Humanities* (NED-New edition, pp. 3–11). University of Minnesota Press.
Recommended reading: Moretti, F. (2000). The Slaughterhouse of Literature. *MLQ: Modern Language Quarterly*, *61*(1), 207–227. https://doi.org/10.1215/00267929-61-1-207

August 30: Pandas Data Analysis (Lab)
Session 2 of Week 2 (4th class meeting overall)

September 4: Labor Day
No class

September 6: Digital History (Seminar)
Session 1 of Week 3 (5th class meeting overall)

Required reading: Cohen, D. J., & Rosenzweig, R. (2005). Introduction: Promises and Perils of Digital History. In *Digital History: A Guide to Gathering, Preserving, and Presenting the Past on the Web* (pp. 1–17). University of Pennsylvania Press.
Recommended reading: Ruggles, S. (2021). The Revival of Quantification: Reflections on Old New Histories. *Social Science History*, *45*(1), 1–25. https://doi.org/10.1017/ssh.2020.44

September 11: Computational Models (Seminar)
Session 1 of Week 4 (6th class meeting overall)

Required reading: So, R. J. (2017). All Models Are Wrong. *PMLA*, *132*(3), 668–673. https://doi.org/10.1632/pmla.2017.132.3.668
Recommended reading: Olsen, M. (1993). Signs, Symbols and Discourses: A New Direction for Computer-Aided Literature Studies. *Computers and the Humanities*, *27*(5–6), 309–314.

September 13: Data Collection (Lab)
Session 2 of Week 4 (7th class meeting overall)

September 18: Data Visualization (Seminar)
Session 1 of Week 5 (8th class meeting overall)

Required reading: Jänicke, S., Franzini, G., Cheema, M. F., & Scheuermann, G. (2017). Visual Text Analysis in Digital Humanities. *Computer Graphics Forum*, *36*(6), 226–250. https://doi.org/10.1111/cgf.12873
Recommended reading: Klein, L. F., Foster, C., Hayward, A., Pramer, E., & Negi, S. (2017). The Shape of History: Elizabeth Palmer Peabody's Feminist Visualization Work. *Feminist Media Histories*, *3*(3), 149–153. https://doi.org/10.1525/fmh.2017.3.3.149

September 20: Data Visualization (Lab)
Session 2 of Week 5 (9th class meeting overall)

September 25: Spatial Analysis (Seminar)
Session 1 of Week 6 (10th class meeting overall)

Required reading: Space, Nation, and the Triumph of Region: A View of the World from Houston. *Journal of American History*, *101*(1), 122–147. https://doi.org/10.1093/jahist/jau184
Recommended reading: Evans, E. F., & Wilkens, M. (2018). Nation, Ethnicity, and the Geography of British Fiction, 1880-1940. *Journal of Cultural Analytics*, *3*(2). https://doi.org/10.22148/16.024

September 27: Spatial Analysis (Lab)
Session 2 of Week 6 (11th class meeting overall)

October 2: TEI (Text Encoding Initiative) (Lab)
Session 1 of Week 7 (12th class meeting overall)

Required reading: Burnard, L., Mueller, M., Rahtz, S., Cummings, J., & Turska, M. (2017, January). *An Introduction to TEI simplePrint*. Text Encoding Initiative. https://tei-c.org/release/doc/tei-p5-exemplars/html/tei_simplePrint.doc.html (Chapters 1–3)
Recommended reading: Singer, K. (2013). Digital Close Reading: TEI for Teaching Poetic Vocabularies. *The Journal of Interactive Technology and Pedagogy*, (3). https://jitp.commons.gc.cuny.edu/digital-close-reading-tei-for-teaching-poetic-vocabularies

October 4: TEI (Text Encoding Initiative) (Guest Lecture)
Session 2 of Week 7 (13th class meeting overall), guest lecture by Professor David Dubin

October 9: Literary Network Analysis (Seminar)
Session 1 of Week 8 (14th class meeting overall)

Required reading: Algee-Hewitt, M. (2017). Distributed Character: Quantitative Models of the English Stage, 1550–1900. *New Literary History*, *48*(4), 751–782. https://doi.org/10.1353/nlh.2017.0038

Recommended reading: Sims, M., & Bamman, D. (2020). Measuring Information Propagation in Literary Social Networks. In B. Webber, T. Cohn, Y. He, & Y. Liu (Eds.), *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)* (pp. 642–652). Association for Computational Linguistics. https://doi.org/10.18653/v1/2020.emnlp-main.47

October 11: Network Analysis I (Lab)
Session 2 of Week 8 (15th class meeting overall)

October 16: Historical Network Analysis (Seminar)
Session 1 of Week 9 (16th class meeting overall)

Required reading: Shang, W., & Sang, Z. (2021). Solidity in a Turbulent Flow: The Social Network of Aristocratic Families in the Eastern Jin Dynasty (317–420 C.E.). *Journal of Historical Network Research*, *5*(1), 1–32. https://doi.org/10.25517/jhnr.v5i1.126
Recommended reading: De Weerdt, H., Ho, B., Wagner, A., Jiyan, Q., & Mingkin, C. (2020). Is There a Faction in This List? *Journal of Chinese History*, *4*(2), 347–389. https://doi.org/10.1017/jch.2020.16

October 18: Network Analysis II (Lab)
Session 2 of Week 9 (17th class meeting overall)

October 23: Prosopography (Seminar)
Session 1 of Week 10 (18th class meeting overall)

Required reading: Tackett, N. (2020). The Evolution of the Tang Political Elite and Its Marriage Network. *Journal of Chinese History*, *4*(2), 277–304. https://doi.org/10.1017/jch.2020.6
Recommended reading: Stone, L. (1971). Prosopography. *Daedalus*, *100*(1), 46–79.

October 25: Semester Project Progress Presentation
Session 2 of Week 10 (19th class meeting overall)

October 30: Topic Modeling (Guest Lecture)
Session 1 of Week 11 (20th class meeting overall), guest lecture by Professor Ted Underwood

Required reading: Underwood, T. (2012, April 7). Topic Modeling Made Just Simple Enough. *The Stone and the Shell*. https://tedunderwood.com/2012/04/07/topic-modeling-made-just-simple-enough
Recommended reading: Schofield, A., & Mimno, D. (2016). Comparing Apples to Apple: The Effects of Stemmers on Topic Models. *Transactions of the Association for Computational Linguistics*, *4*, 287–300. https://doi.org/10.1162/tacl_a_00099

November 1: Topic Modeling (Lab, Online)
Session 2 of Week 11 (21st class meeting overall)

November 6: Machine Learning (Seminar)

Session 1 of Week 12 (22nd class meeting overall)

Required reading: Long, H., & So, R. J. (2016). Turbulent Flow: A Computational Model of World Literature. *Modern Language Quarterly*, *77*(3), 345–367. https://doi.org/10.1215/00267929-3570656
Recommended reading: Jockers, M., & Kirilloff, G. (2017). Understanding Gender and Character Agency in the 19th Century Novel. *Journal of Cultural Analytics*, *2*(2). https://doi.org/10.22148/16.010

November 8: Machine Learning (Lab)
Session 2 of Week 12 (23rd class meeting overall)

November 13: Critiques on Digital Humanities (Seminar)
Session 1 of Week 13 (24th class meeting overall)

Required reading: Da, N. Z. (2019). The Computational Case Against Computational Literary Studies. *Critical Inquiry*, *45*(3), 601–639. https://doi.org/10.1086/702594
Recommended reading: Putnam, L. (2016). The Transnational and the Text-Searchable: Digitized Sources and the Shadows They Cast. *The American Historical Review*, *121*(2), 377–402. https://doi.org/10.1093/ahr/121.2.377

November 15: Advanced Text Analysis I (Lab)
Session 2 of Week 13 (25th class meeting overall)

November 20: Fall Break
No class

November 22: Fall Break
No class

November 27: Computational Social Science (Seminar)
Session 1 of Week 15 (26th class meeting overall)

Required reading: Edelmann, A., Wolff, T., Montagne, D., & Bail, C. A. (2020). Computational Social Science and Sociology. *Annual Review of Sociology*, *46*, 61–81. https://doi.org/10.1146/annurev-soc-121919-054621
Recommended reading: Lazer, D., Pentland, A., Adamic, L., Aral, S., Barabasi, A. L., Brewer, D., Nicholas Christakis, Contractor, N., Fowler, J., Gutmann, M., Jebara, T., King, G., Macy, M., Roy, D., & Van Alstyne, M. (2009). Computational Social Science. *Science*, *323*(5915), 721–723. https://doi.org/10.1126/science.1167742

November 29: Advanced Text Analysis II (Lab)
Session 2 of Week 15 (27th class meeting overall)

December 4: Semester Project Presentation
Session 1 of Week 16 (28th class meeting overall)

<u>December 6: Semester Project Presentation</u>
Session 2 of Week 16 (29th class meeting overall)

Acknowledgements
In planning this syllabus, I consulted DH syllabi by Ted Underwood, David Dubin, and Zoe LeBlanc (especially for the semester project). The weekly programming assignments were strongly influenced by the online textbook *Introduction to Cultural Analytics & Python* by Melanie Walsh, while the policy on the use of AI writing tools adopted the idea of Andrew Piper.