

## COURSE INFORMATION

### INSC 543-001/002 Spatial Data Management

Fall 2020, 3 Credit Hours

University of Tennessee, Knoxville

Course Mode: Online, synchronous

Class Meetings: Wednesdays, 6:30 – 9:10 PM EST

ZOOM: <https://tennessee.zoom.us/j/96448773243>

### Faculty Contact Information

- Wade Bishop, Associate Professor
- (he/him/his)
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- Communications Bldg., 454
- 865-974-2775
- <https://bradleywadebishop.github.io/website/>
- Office Hours: Tuesdays, 8AM EST to noon



### SIS Office Information

- 450 Communications Bldg.
- 1345 Circle Park Drive
- Knoxville, TN 37996-0341
- SIS Office: 865.974.2148
- Fax (SIS): 865.974.4667

### Catalog Description

Introduces the concepts related to spatial data management, including types of spatial data, spatial data discovery, data curation, and spatial dataset metadata creation. Issues related to research data management policies and related information services.

### Background

IS543 is an elective developed for the ‘*Geographic Information Librarianship*’ project (GIL) with funding by the Laura Bush 21st Century Librarian Program Grant via the Institute of Museum and Library Services (IMLS) in their “programs to build institutional capacity” category. The IMLS GIL project surveyed practicing GIS and map librarians, archivists, and other information professionals to validate the core competencies established by the Map and Geographic Information Round Table (MAGIRT) (<http://www.ala.org/magirt/publications>).

Professionals with real-world experience weighed the importance of knowledge, skills, and abilities and informed the topics covered in this course. The following student learning outcomes derive from MAGIRT Core Competencies deemed very important.

## **Student Learning Outcomes**

Students who complete this course will:

### 1. Geography and Cartography

1.1 *Students will demonstrate geographic and cartographic principles, including geographic and cartographic scale, projection, grids, and geographic coordinate systems*

### 2. Collection development/Records appraisal/Collection maintenance

2.1 *Students will demonstrate knowledge of local, state/provincial, federal and international mapping agencies and private map publishers, map series and similar publication patterns, and gazetteers, data portals, volunteered geographic information, and aspects of the Federal Depository Library Program*

2.2 *Students will select strategies to obtain different types of maps, imagery, and other geospatial data*

2.3 *Students will describe copyright considerations and the ability to negotiate licensing agreements for databases and collections of geographic information*

2.4 *Students will explain how to assess the strengths and specialties in a collection and the needs of users to inform collection development*

2.5 *Students will describe proper materials handling, especially for rare and fragile materials*

### 3. Access and Use

3.1 *Students will demonstrate the ability to locate geospatial data and software support*

3.2 *Students will gain awareness of GIS tutorials & training*

3.3 *Students will develop and deliver geographic information consultations*

### 4. Organization – Spatial data infrastructures/Content standards/Metadata/Cataloging

4.1 *Students will explain metadata standards, schemas, and issues*

4.2 *Students will understand and interpret existing metadata in geospatial records*

4.3 *Students will define projections, coordinate systems, and other physical characteristics of cartographic items to create metadata records*

4.4 *Students will interpret and calculate cartographic scale*

### **Required Text**

Reading materials will be available online, either on the Internet or UT library. Readings for each week will be given in advance and it will be the responsibility of the student to complete the readings and contribute to the class discussions based on the readings.

## **COMMUNICATION**

### **Email**

I am required to communicate with you through your UTK email address. If you prefer to use another address, consult the [OIT Helpdesk](#) to obtain directions for forwarding your UTK email to your preferred address if you do not wish to check both accounts.

### **Instructor Availability**

Please don't hesitate to email me with updates, questions, or concerns. I will typically respond within one or two days during the week, but I might not respond on the weekend. I will notify you if I will be out of town and/or if connection (or other) issues may delay a response.

## **COMPUTING REQUIREMENTS AND RESOURCES**

### **Requirements**

Since you will attend class via Zoom, you should plan to have a device that will allow you to take notes, complete in-class quizzes, and view course readings. This might be best on a desktop or laptop. Zoom link <https://tennessee.zoom.us/j/96448773243> Password is 543.

### **Course Resources**

Readings are available in Canvas and each week's readings appear in the course schedule.

## **ATTENDANCE AND PARTICIPATION POLICIES**

### **Learner Expectations**

- Be prepared for all classes
- Be respectful of others
- Actively contribute to the learning activities in class
- Abide by the UT Honor Code Instructor Expectations

### **Instructor Expectations**

- Be prepared for all classes
- Evaluate all work fairly and equitably
- Provide timely feedback
- Be respectful of all students
- Be responsive to student emails and requests for meetings
- Create and facilitate meaningful learning activities
- Behave according to University codes of conduct

### **Attendance and Participation**

See section below, Assignments. In sum, you are expected to attend all classes and participate.

### **Inclement Weather**

The chancellor (or appointed representative) may officially close or suspend selected activities of the university because of extreme weather conditions. When a decision to close is made, it applies to all classes (whether on-campus or online). The information is distributed to the campus community, shared with local media, and posted on the University homepage at <http://utk.edu>.

## **ADDITIONAL POLICIES AND POINTS OF INFORMATION**

### **Disability Services**

Any student who feels they may need an accommodation based on the impact of a disability should contact [Student Disability Services](#) in 2227 Dunford Hall at 865-974-6087, or by video relay at 865-622-6566, to document their eligibility for services. ODS will work with students and faculty to coordinate reasonable accommodations for students with documented disabilities.

### **University Civility Statement**

Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability and courteousness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other's well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus. For more information, see the [UT Principles of Civility and Community](#).

### **CCI Diversity Statement**

The College of Communication and Information recognizes that a college diverse in its people, curricula, scholarship, research, and creative activities expands opportunities for intellectual inquiry and engagement, helps students develop critical thinking skills, and prepares students for social and civic responsibilities. All members of the College benefit from diversity and the quality of learning, research, scholarship and creative activities is enhanced by a climate of inclusion, understanding and appreciation of differences and the full range of human experience. As a result, the College is committed to diversity and equal opportunity and it recognizes that it must represent the diversity inherent in American society. The College is acutely aware that diversity and fairness are foundations that unite the College's faculty, staff, students, and the larger communication and information community.

### **Instructor Status as a Title IX Mandatory Reporter**

University of Tennessee faculty are committed to supporting our students and upholding gender equity laws as outlined by Title IX. Please be aware that if you choose to confide in a faculty member regarding an issue of sexual misconduct, dating violence, or stalking, we are obligated to inform the University's Title IX Coordinator, who can assist you in connecting with all possible resources both on- and off-campus. If you would like to speak with someone confidentially, the

Student Counseling Center (865-974-2196) and the Student Health Center (865-974-3135) are both confidential resources. For additional resources and information, visit [titleix.utk.edu](http://titleix.utk.edu).

## ASSIGNMENTS, ASSESSMENTS, AND EVALUATIONS

### Academic Integrity

Students should be familiar with the [Hilltopics Student Handbook](#), and comply with all academic policies. This includes the University of Tennessee Honor Statement and the Academic Integrity Policy.

The Honor Statement reads: “*An essential feature of the University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. ‘As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.’*” For more information, see the Honor Statement on the Academic Policies and Procedures page of the current [catalog](#) for student and faculty responsibilities.

The Academic Integrity policy reads: “*Study, preparation and presentation should involve at all times the student’s own work, unless it has been clearly specified that work is to be a team effort. Academic honesty requires that the student present his or her own work in all academic projects, including tests, papers, homework, and class presentation. When incorporating the work of other scholars and writers into a project, the student must accurately cite the source of that work.*” For additional information, see the [Student Code of Conduct](#).

### Plagiarism

Plagiarism in any of its forms is intolerable, and attention to matters of documentation in all written work is expected and required. Inadvertence, alleged lack of understanding, or avowed ignorance of the various types of plagiarism are not acceptable excuses.

*Specific examples of plagiarism are:*

1. Copying without proper documentation (quotation marks and a citation) written or spoken words, phrases, or sentences from any source.
2. Summarizing without proper documentation (usually a citation) ideas from another source (unless such information is recognized as common knowledge).
3. Borrowing facts, statistics, graphs, pictorial representations, or phrases without acknowledging the source (unless such information is recognized as common knowledge).
4. Collaborating on a graded assignment without the instructor’s approval.
5. Submitting work, either in whole or in part, created by a professional service and used without attribution (e.g., paper, speech, bibliography, or photograph).

Students who may be unsure of the nature of plagiarism should consult the instructor or a guide for writing research reports. Resources are available through the University Libraries, including a [Citing Sources guide](#).

Infractions of academic integrity are penalized according to the severity of the infraction but may include a course grade of "F."

## ASSIGNMENTS

### Assignment Descriptions and Due Dates

This table provides a brief summary of assignment by name, due date, point value and percentage of final grade. A brief description of each assignment follows the table.

Assignment	Point Value	Percentage of Final Grade	Due Date
Cartographic Metadata Record	20	20%	10/07/2020
Digital Repository Assignment	20	20%	11/12/2020
Final Paper/Presentation	50	50%	12/02/2020
Participation	10	10%	ongoing
<b>TOTAL</b>	<b>100</b>	<b>100%</b>	

#### Attendance & Participation (10%):

It is important to note that class participation is ten percent of your grade because attendance and participation is an important component of facilitating learning in this class.

You are expected to attend all classes. You will lose participation points for excessive and unexcused absences and for arriving late to class. You should be in Zoom and ready to start at 6:30 PM.

It is assumed that each student will miss no more than one session and will speak in class -- the equivalent of a "B" grade for "participation." Missing more classes or failing to participate will lower your grade; frequent participation will raise the grade.

Regular attendance is required and necessary. Unexplained absences will affect your grade. Contact me as soon as possible if you cannot attend class. If you must be absent from class, you must:

- Inform me in advance or as soon as possible after class.
- Submit any work due from the missed class period.
- Obtain notes, handouts, and so forth from Canvas.

*Acceptable reasons for absence from class include:*

- Illness
- Serious family emergencies
- Military obligation
- Severe weather conditions
- Religious holidays and
- Obligations for court imposed legal obligations (i.e., jury duty, subpoena)

Other reasons may also be approved.

Missing more than one class meeting for reasons other than those listed above will have a negative impact on your course participation grade.

Being engaged in this course is predicated on consistent attendance and timeliness, and coming to class having closely read and considered the assigned material. But more than this, “engagement” entails frequently contributing your ideas and your voice to class discussions.

### **Final Paper/Presentation**

1. Select and describe a topic, with a clear purpose and some literature review for consideration. Please select a topic that will benefit your future and that you will enjoy.  
– *Due 11:59PM EST Monday, September 24.*
2. Find **research articles** (peer-reviewed) on the topic, and use your interpretation and evaluation of the research to inform important aspects of the future of geographic information related to your topic; **DO NOT** simply summarize what has been researched, but relate the research articles to each other and synthesize a theme out of the articles you find. Each topic will have a different number of key articles, but for a final paper this length I expect *~20-30 citations*.
3. Discuss future implications for the field related to your topic and specifically for your career.
4. Finally, you will prepare a 15 minute presentation of your paper to inform the class.
5. As a semester long assignment, I have high expectations for the quality of this work. You should produce a paper that is of publishable quality. I am indifferent about structure or citation style; however, be consistent and do not hesitate to ask for clarification. In fact, you may want to take this opportunity to produce work that would lead to an actual presentation, paper, or poster.

To give full attention to the paper, please produce at least 4,000 words of content.

<b>IS 543: Final Paper Rubric</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>0</b>
Purpose (Due Sept 24)	The author presents the topic, with a working title, a brief description of an investigation plan, with how investigation will occur and how the data will be found/collected, and a hypothesis of what you expect to find, and also a literature review for consideration (at least 5 sources).	The author presents the topic, with a working title, a brief description of an investigation plan, but fails to include all other required details.	The author presents the topic, with a working title, a brief description of an investigation plan, but fails to at least half of the other required details.	Topic of the paper is unclear and does not address all required details.
Literature Review	Sufficient background information and a clear review of the topic and why it is important to the field is evident.	Adequate background information and a clear review of the topic and why it is important to the field is provided.	The author provides limited background information.	Insufficient or no background information is provided.
Critical Analysis of the Research	Exceptional integration and synthesis of research. Very effectively identifies and discusses implications and common themes relevant to the topic.	Research is integrated and well synthesized. Identifies and discusses some implications and/or themes relevant to the topic.	Very little integration and/or synthesis. Mainly reflects previous research findings, with very little critical analysis of the literature.	Discussion of the research is integrated poorly, with little to no critical analysis of past studies and/or articles.
Future Implications for Field	Effectively applies research findings and discusses implications for the future practice of the field and/or careers related to the topic.	Adequately discusses implications for the future practice of the field and/or careers related to the topic.	Discussion of application to future practice and/or careers is limited.	Does not discuss implications for future practice of the field or careers related to the topic.
References	Author includes at least 20 peer-reviewed articles and correctly cites them according to a consistent citation style of their choosing.	Author includes between 15-19 peer-reviewed articles and cites them according to a consistent citation style of their choosing.	Author includes fewer than 15 peer-reviewed articles and cites them according to their chosen citation style.	The author includes no peer-reviewed articles and does not cite any sufficient outside research.
Grammar and Formatting	No grammatical, spelling, or punctuation errors, and paper follows a consistent format.	Few grammatical, spelling, or punctuation errors, and format is generally consistent.	More than 10 grammatical, spelling, or punctuation errors, and/or formatting is inconsistent.	More than 15 grammatical, spelling, or punctuation errors, and/or inconsistent formatting detracts from paper's readability.
Length of Research Paper	Length of final paper meets the assigned 4,000-word minimum	Length of final paper falls slightly below 4,000-word minimum	Length of final paper falls sufficiently below the assigned 4,000-word minimum	Length of final paper is unacceptable.
Presentation	Class presentation is around 15 minutes long and clearly presents the main issues of the topic.	Class presentation is around 15 minutes long and fails to clearly cover the issues of the topic.	The presentation goes substantially over or under 15 minutes in length, but covers main issues of the topic	The presentation goes substantially over or under 15 minutes in length and is unclear in covering the main issues of the topic

The other assignment instructions will be made available in Canvas.



### Submitting Assignments, Late Assignments

Assignments should be submitted to the “assignments” area of Canvas and are due (officially) at 11:59 p.m. EST on the due date listed on the Syllabus. Late assignments are not accepted unless prior arrangements have been made, or if you have an unexpected emergency. Quizzes, reading reflections, and activities have firm due dates and cannot be made-up.

### Grading Scale

Semester grades will be assigned according to the following scale:

A	93-100	Superior performance (4 quality points)
A-	90-92.99	Intermediate superior performance (3.7 quality points)
B+	88-89.99	Very good performance (3.3 quality points)
B	83-87.99	Good performance (3.0 quality points)
B-	80-82.99	Intermediate good performance (2.7 quality points)
C+	78-79.99	Fair performance (2.3 quality points)
C	73-77.99	Satisfactory performance (2.0 quality points)
C -	70-72.99	Unsatisfactory performance (1.7 quality points)
D+	68-69.99	Unsatisfactory performance (1.3 quality points)
D	63-67.99	Unsatisfactory performance (1.0 quality points)
D -	60-62.99	Unsatisfactory performance (0.7 quality points)
F	0-59.99	Failure performance (0.0 quality points)
S		Satisfactory; only assigned for C or better work when a course is taken on a S/NC grading basis. Carries no point value.
NC		No Credit; indicates failure to complete a course satisfactorily, and is only assigned for C- or worse work when a course is taken on a S/NC grading basis. Carries no point value.
I		Under extraordinary circumstances and at the discretion of the instructor, the grade of I (Incomplete) may be awarded to students who have satisfactorily completed a substantial portion of the course but cannot complete the course for reasons beyond their control. An I carries no quality points. If the I grade is not removed within one calendar year or upon graduation, it shall be changed to an F and count as a failure in the computation of the grade point average.
W		Indicates student has officially withdrawn from the course or the university. Carries no point value.

### Incompletes

Based on adopted University of Tennessee-Knoxville policy, a grade of *I* (Incomplete) is reserved for emergencies that prevent the student from completing the course on time. Incompletes are granted only under "the most unusual of circumstances" and solely at the discretion of the instructor. Plan your semester’s course of study carefully to insure sufficient time to complete the required work. For students who simply "disappear" without contacting the instructor and without completing the required form, an "F" is submitted.

## COURSE EVALUATION

You will be invited by email to evaluate the course at the end of the term via TNVoice. Please participate in this valuable process. I also invite your comments throughout the course and read all comments, suggestions, and recommendations.

## DISCLAIMER

Should it be necessary to cancel a class meeting, every effort will be taken to do so in advance. Look for e-mail announcements via Canvas.

The course schedule may change due to unforeseen circumstances, but you will be notified of any alternations via Canvas.

## COURSE OUTLINE

\* Unless otherwise indicated, all readings can be found on Canvas and should be completed prior to the lecture.

<u>Week 1 (Aug. 19)</u>	<b>Read:</b> Geographic Information: Organization, Access, and Use (Ch. 1) <b>Watch:</b> GIS – <a href="#">Interconnecting Our World</a> , Jack Dangermond
<b>I. <u>Organization</u></b>	
<u>Week 2 (Aug. 26)</u>	<b>A Brief History of Geography</b> <b>Read:</b> Geographic Information, Maps, and GIS (Ch. 2) Goodchild, M. F. (2019). Geography and geographic information science: An evolving relationship. <i>The Canadian Geographer / Le Géographe canadien</i> , 63(4), 530-539. <a href="https://doi.org/10.1111/cag.12554">https://doi.org/10.1111/cag.12554</a> Schuurman, N. (2009). Geographic Information Science (GISc). In D. Gregory, R. Johnston, G. Pratt, M. J. Watts, & S. Whatmore (Eds.), <i>The Dictionary of Human Geography</i> (5 <sup>th</sup> ed.) (pp. 277-279). Malden, MA: Wiley-Blackwell.
<u>Week 3 (Sept. 2)</u>	<b>0° : A Primer on Geographic Representation</b> <b>Guest Speaker:</b> Tim Kuhn, Director, Tennessee State Data Center, Boyd Center for Business and Economic Research, Haslam College of Business, The University of Tennessee, Knoxville  <b>Read:</b> 0° : A Primer on Geographic Representation (Ch. 3) Godfrey, L., & Mackaness, W. (2017). The bounds of distortion: truth, meaning and efficacy in digital geographic representation. <i>International Journal of Cartography</i> , 3(1), 31-44. <a href="https://doi.org/10.1080/23729333.2017.1301348">doi:10.1080/23729333.2017.1301348</a>

<p><u>Week 4 (Sept. 9)</u></p>	<p><b>The Power of Maps</b></p> <p><b>Read:</b> Crampton, J. W. (2010). Governing with Maps: Cartographic Political Economy. In <i>Mapping: A Critical Introduction to Cartography and GIS</i> (pp. 62-80). Malden, MA: Wiley-Blackwell.</p> <p>Thatcher, J., Bergmann, L., Ricker, B., Rose-Redwood, R., O’Sullivan, D., Barnes, T. J., ... Young, J. C. (2016). Revisiting critical GIS. <i>Environment and Planning A: Economy and Space</i>, 48(5), 815–824. <a href="https://doi.org/10.1177/0308518X15622208">https://doi.org/10.1177/0308518X15622208</a></p> <p><b>Guest Speaker:</b> Olga Buchel, PhD, Postdoctoral Researcher at New England Complex Systems Institute</p>
<p><u>Week 5 (Sep. 16)</u></p>	<p><b>Geographic Information Policy</b></p> <p><b>Read:</b> Policy (Ch. 4)</p> <p>Folger, P. (2018). <i>The Geospatial Data Act of 2018</i>. (CRS Report No. R45348). <a href="https://fas.org/sgp/crs/misc/R45348.pdf">https://fas.org/sgp/crs/misc/R45348.pdf</a></p> <p><a href="https://www.fgdc.gov/gda">https://www.fgdc.gov/gda</a></p> <p>Smith, C. D., &amp; Mennis, J. (2020). Incorporating Geographic Information Science and Technology in Response to the COVID-19 Pandemic. <i>Preventing chronic disease</i>, 17, E58. <a href="https://doi.org/10.5888/pcd17.200246">https://doi.org/10.5888/pcd17.200246</a></p>
<p><u>Week 6 (Sep. 23)</u></p>	<p><b>Metadata and Digital Repositories</b></p> <p><b>Read:</b> Metadata (Ch. 5)</p> <p><b>Assignments:</b> +<i>Final Paper/Presentation Topic due 11:59PM EST Sept. 23.</i></p>
<p><u>Week 7 (Sep. 30)</u></p>	<p><b>Map Cataloging</b></p> <p><b>Guest Speakers:</b> Susan M. Moore, University of Northern Iowa</p> <p><b>Read:</b></p> <p>Andrew, P. G., Moore, S. M., &amp; Larsgaard, M. L. (2015). RDA, Resource description &amp; access and cartographic resources. Ch 2.</p> <p>Western Association of Map Libraries. (2013). Map librarians' toolbox. Retrieved from <a href="http://www.waml.org/maptools.html">http://www.waml.org/maptools.html</a></p> <p><b>Visit:</b> Bounding Box Creation Tool, found at <a href="http://boundingbox.klokantech.com/">http://boundingbox.klokantech.com/</a></p>
<p style="text-align: center;"><b>*continues*</b></p>	

<b>II. Access and Use</b>	
<u>Week 8 (Oct. 7)</u>	<p><b>Geoweb</b></p> <p><b>Read:</b> Geoweb (Ch. 6)</p> <p>Jefferson, B. J. (2018). Predictable Policing: Predictive Crime Mapping and Geographies of Policing and Race. <i>Annals of the American Association of Geographers</i>, 108(1), 1-16. <a href="https://doi.org/10.1080/24694452.2017.1293500">doi:10.1080/24694452.2017.1293500</a></p> <p>Dave, D. M., Friedson, A. I., Matsuzawa, K., Sabia, J. J., &amp; Safford, S. (2020). Black Lives Matter Protests, Social Distancing, and COVID-19. <i>National Bureau of Economic Research Working Paper Series</i>, No. 27408. <a href="https://doi.org/10.3386/w27408">doi:10.3386/w27408</a></p> <p><b>Assignments:</b> +<i>Cartographic Metadata Record is due 11:59 PM EST October 7.</i></p>
<u>Week 9 (Oct. 14)</u>	<p><b>Discovery and Fitness for Use</b></p> <p><b>Guest Speaker:</b> Amy Work, GIS Librarian   UC San Diego Library</p> <p><b>Read:</b> Discovery and Fitness for Use (Ch. 7)</p> <p>Bishop, B. W., Hank, C. F., Webster, J., &amp; Howard, R. A. (2019). Scientists' data discovery and reuse behavior: (Meta)data fitness for use and the FAIR Data Principles. <i>Proceedings of the Association for Information Science and Technology</i>, 56(1). <a href="https://doi.org/10.1002/pra2.4">https://doi.org/10.1002/pra2.4</a> [Best Paper]</p>
<u>Week 10 (Oct. 21)</u>	<p><b>Meeting Information Needs</b></p> <p><b>Read:</b> Meeting Information Needs (Ch. 8)</p>
<b>III. Spatial Research Data Management</b>	
<u>Week 11 (Oct. 28)</u>	<p><b>Data lifecycle</b></p> <p><b>Guest Speaker:</b> Madison Langseth, U.S. Geological Survey Science Analytics &amp; Synthesis (SAS), Denver Federal Center</p> <p><b>Read:</b> Data lifecycle (Ch. 9)</p> <p>Goodman A, Pepe A, Blocker AW, Borgman CL, Cranmer K, et al. (2014) Ten Simple Rules for the Care and Feeding of Scientific Data. <i>PLOS Computational Biology</i> 10(4): e1003542. <a href="https://doi.org/10.1371/journal.pcbi.1003542">https://doi.org/10.1371/journal.pcbi.1003542</a></p>
<u>Week 12 (Nov. 4)</u>	<p><b>Spatial Data Management</b></p> <p><b>Read:</b></p> <p>Yu, J., Zhang, Z. &amp; Sarwat, M. Spatial data management in apache spark: the GeoSpark perspective and beyond. <i>Geoinformatica</i> <b>23</b>, 37–78 (2019). <a href="https://doi.org/10.1007/s10707-018-0330-9">https://doi.org/10.1007/s10707-018-0330-9</a></p> <p>Palmer CL, Thomer AK, Baker KS, Wickett KM, Hendrix CL, et al. (2017) Site-based data curation based on hot spring geobiology. <i>PLOS ONE</i> 12(3): e0172090. <a href="https://doi.org/10.1371/journal.pone.0172090">https://doi.org/10.1371/journal.pone.0172090</a></p> <p><b>Assignments:</b> +<i>Digital Repository Assignment is due 11:59PM EST Wednesday, November 12</i></p>

Week 13 (Nov. 11)	<b>Education and Some Final Presentations</b> <b>Read:</b> Education (Ch. 10)
Week 14 (Nov. 18)	<b>Final Presentations</b> <b>Assignments:</b> + <i>Final paper is due 11:59pm Wednesday, December 2.</i>

### Additional background readings

- Abresch, J., Hanson, A., Heron, S. J. and Reehling, P. J. (2008). *Integrating Geographic Information Systems into Library Services: A Guide for Academic Libraries*. Hershey, PA: Information Science Pub.
- Bethune, A., Lazorchak, B., & Nagy, Z. (2009). GeoMAPP: A geospatial multistate archive and preservation partnership. *Journal of Map & Geography Libraries*, 6(1), 45-56.
- Blatt, A. J. (2012). Ethics and privacy issues in the use of GIS. *Journal of Map & Geography Libraries*, 8(1), 80-84.
- Boxall, J. (2002). Geolibraries, the global spatial data infrastructure and digital Earth: A time for map librarians to reflect upon the moonshot. *INSPEL*, 36(1), 1-21.
- Chrisman, N. R. (1999). What does ‘GIS’ mean? *Transactions in GIS*, 3(2), 175-186.
- Clinton, W. (1994, April 13). *Coordinating geographic data acquisition and access: The National Spatial Data Infrastructure*. Executive Order 12906. Retrieved April 28, 2008, from <http://govinfo.library.unt.edu/npr/library/direct/orders/20fa.html>.
- Crampton, J.W. (2009). Cartography: maps 2.0. *Progress in Human Geography*, 33(1), 91-100.
- DiBiase, D., University Consortium for Geographic Information Science., Model Curricula Task Force., & Body of Knowledge Advisory Board. (2006). *Geographic information science and technology body of knowledge*. Washington, D.C: Association of American Geographers.
- Dodsworth, E. (2012). *Getting started with GIS: A LITA guide*. New York: Neal-Schuman Publishers.
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