

SSCI 581 – 35744, Concepts for Spatial Thinking

Units: 4

Term — Day — Time: Summer, 2015, Online

Location: Online

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Course Description

This course is designed as an introduction to geographic information science, and more importantly, to the cartographic and spatial concepts underlying spatial thinking and the associated geospatial technologies. It is the entrée course for the GIST M.S. degree, GIST Graduate Certificate, and Geospatial Intelligence Graduate Certificate. This is also a good course for those who want to improve their GIS skills and for those who wish to first understand the underlying concepts. In this course, you will gain an understanding of the fundamentals of geographic information science, including geodesy, the evolving role of maps in science, policy and our everyday lives, and the ways in which various forms of spatial analysis, modeling and visualization can be performed using Esri's ArcGIS ecosystem. We will cover five major topics:

Spatial thinking – We will start by exploring why spatial thinking is important for describing, analyzing, modeling and visualizing our world and how the "habit" of spatial thinking can be encouraged and cultivated among working professionals, citizens and most of all, students of all ages. We will use a series of readings and case studies to show how spatial thinking permeates and supports various kinds of problem solving.

Geodesy – We will next turn our attention to geodesy, which is the branch of science most concerned with positioning and determining what is where on Earth. The major topics to be covered – geodetic datums, geoids, coordinate systems, and map projections – are fundamental building blocks for all that follows in our online courses and programs and of course, in the successful deployment and use of geospatial technologies.

Fundamentals of GIS – We will explore the evolving field of geographic information science and the relationships between this and other disciplines or fields spread across the natural and social sciences, the humanities, engineering and the applied sciences, and the professions (architecture, health, journalism and social work, among others).

The ArcGIS Ecosystem – We will also begin to explore how the ArcGIS software ecosystem can be used to represent the world around us using a series of tutorials that cover the various forms of geospatial data, the raster and vector data models, coordinate systems and map projections, and selected forms of geographic analysis, including geoprocessing and raster analysis.

Maps – Maps have been used for hundreds and possibly thousands of years to compile and communicate geographic concepts and relationships. Once the more or less exclusive domain of professional cartographers, maps can be authored and shared in new and wonderful ways using GIS and the Web. We will review past, present and future uses of maps and how these can be generated and used to depict and communicate geographic knowledge in a digital age.

Learning Objectives

When you have completed this course, you will be able to:

- Explain the role and importance of geodesy and how the various components – geodetic datums, geoids, coordinate systems, and map projections – can be used to position and locate things (i.e. places, people, features) on the Earth's surface.
- Specify how the various elements of spatial thinking can enable us to identify, describe, analyze and visualize spatial phenomena.
- Define the fundamental spatial concepts and terms such as arrangement, orientation, diffusion, dispersion and pattern.
- Explain cartographic excellence and how maps and geographic understanding have been used throughout history to organize and empower different groups of people.

- Speculate on how maps might be used in the next few decades.
- Describe one or more compelling applications of spatial thinking and why these kinds of workflows and/or solutions are important.
- Specify how the spatial analysis, modeling, and visualization tools included in geographic information systems and other geospatial technologies might be used to advance knowledge creation and communication across a variety of disciplines.

Prerequisite(s): None

Co-Requisite (s): None

Concurrent Enrollment: None

Recommended Preparation: None

Course Notes

This is a graduate level course, so you should expect this class to be intellectually challenging. As graduate students you are expected to engage with the information you are learning and to explore the heady cauldron of ideas, opinion, and analysis that describe our collective effort to thoroughly interrogate the subject at hand. Learning arises from active engagement with the knowledge found in our reading materials and with one another. As in any graduate class, the instructor's role is that of a guide who keeps you on this path of discovery and you will find that you will learn much from your fellow classmates. The challenge for the instructor is to replicate such an academic experience within the milieu of "online learning."

All course materials will be organized through Blackboard. The main theoretical concepts will be provided through course notes and assigned readings. Written assignments will give students an opportunity to internalize and apply the concepts and theory learned from readings. Some assignments require student interaction, all will benefit from it. Hands-on practical exercises will mainly use ArcGIS version 10.3, which is accessible via the GIST Servers.

Technological Proficiency and Hardware/Software Required

We have several technologies that will facilitate our course work and our interactions, despite our dispersed locations. These include:

Blackboard – All course materials and correspondence will be posted on the course Blackboard site. As a registered student, you will find this course will show up in your available classes no later than 12:00 noon, PT on the first day of classes. It is here that the day-to-day flow of the course will be recorded.

Discussion boards – On the Blackboard site, we will post a number of discussion threads related to various course topics. These threads are very important in terms of providing support to each other while working on class exercises to share hints and helpful tips, as you would do in a classroom setting. I will check the discussion threads periodically and offer occasional comments. Please send your course instructor an email directly if you have a question or concern that requires my immediate attention.

Live meetings and presentations – We will use a browser-based service called Adobe Connect to create synchronous, interactive sessions. With voice and webcam capabilities, Adobe Connect can be used to share presentations and even our desktops between two or more people.

Individual meetings – For one-on-one meetings, we generally find it easier to use Adobe Connect or the telephone.

GIST server and tech support – This course will utilize the GIST Servers to provide you with your own virtual desktop. You can access the GIST Server at: <https://gistonline.usc.edu>. If you are unable to connect to the server or experience any type of technical issues, send an email to GIST Tech Support at gistsupport@dornsife.usc.edu and make sure to copy (cc) me on the email. GIST Tech Support is available Monday through Friday, 9:00 a.m. to 5:00 p.m. PT. ArcGIS is provided online via the GIST Server; hence, you do not need to install it on your own computer. Instead, every student must satisfy the following technology requirements:

- A computer with a fast Internet connection;
- A functional webcam and a microphone for use whenever a presentation or meeting is scheduled;
- A modern web browser, Firefox recommended, to access the GIST Server.

Required Readings and Supplementary Materials

Textbooks – There are seven texts for this course. We encourage you to purchase the first and the sixth of these books early since you will need these materials from the opening day of class. They are available from the USC Bookstore or online outlets such as Amazon. Please note that the NRC Report can be downloaded free-of-charge from the web and that a portion of the second, third and fourth texts will be posted on Blackboard, and the Wilson and Fotheringham book is available through the USC Libraries as an e-Book.

1. Bolstad, P. 2012. *GIS Fundamentals: A First Text on Geographic Information Systems*. 4th Edition. White Bear Lake, MN: Eider Press (available at <http://www.AtlasBooks.com>).
2. DeMers M. N. 2009. *Fundamentals of Geographic Information Systems*. 4th edition. New York: John Wiley & Sons, Inc.
3. Kimerling, A. J., A. R. Buckley, P. C. Muehrcke, and J. O. Muehrcke. 2012. *Map Use: Reading and Analysis*. 7th edition. Redlands, CA: Esri Press.
4. Mitchell, A. 2012. *The Esri Guide to GIS Analysis Volume 3: Modeling Suitability, Movement, and Interaction*, Redlands, CA: Esri Press.
5. National Research Council. 2006. *Learning to Think Spatially: GIS as a Support System in the K-12 Curriculum*, Washington, DC: National Academies Press (available at http://www.nap.edu/catalog.php?record_id=11019).
6. Price, M. 2013. *Mastering ArcGIS*. 6th Edition. New York: McGraw-Hill.
7. Wilson, J. P. and A. S. Fotheringham, editors. 2008. *The Handbook of Geographic Information Science*, Oxford, Blackwell.

The aforementioned textbooks will be supplemented with Course Notes and a mixture of readings from academic journals, professional reports and authoritative websites. For those of you in SSCI 587 as well this term, you will recognize that the first, fourth and fifth texts are also required for SSCI 587: Spatial Data Acquisition.

Readings – To be posted to Blackboard under Course Documents:

1. Downs, R. M. 1997. "The Geographic Eye: Seeing through GIS?" *Transactions in GIS* 2: 111-121.
2. Goodchild, M. F. 2011. "Spatial thinking and the GIS user interface." *Procedia Social and Behavioral Sciences* 21: 3-9.
3. DiBiase, D. W. 2007. "Is GIS a Wampeter?" *Transactions in GIS* 11: 1-8.

4. DiBiase, D. W., M. DeMers, A. Johnson, K. Kemp, A. T. Luck, B. Plewe, and E. Wentz. 2007. "Introducing the First Edition of Geographic Information Science and Technology Body of Knowledge." *Cartography and Geographic Information Science* 34: 113-118.
5. DiBiase D. W., T. Corbin, T. Fox, J. Francica, K. Green, J. Jackson, G. Jeffress, B. Jones, B. Jones, J. Mennis, K. Schuckman, C. Smith, and J. Van Sickle. 2010. "The New Geospatial Technology Competency Model: Bringing Workforce Needs into Focus." *URISA Journal* 22: 55-72.
6. Goodchild, M. F. 1992. "Geographical Information Science." *International Journal of Geographical Information Systems* 1: 31-45.
7. Wright, D. J., M. F. Goodchild and J. D. Proctor. 1997. "Demystifying the persistent ambiguity of GIS as 'Tool' Versus 'Science.'" *Annals of the Association of American Geographers* 87: 346-362.
8. Reitsma, F. 2013. "Revisiting the 'Is GIScience a Science?' Debate (or Quite Possibly Scientific Gerrymandering)." *International Journal of Geographical Information Science* 2: 211-221.
9. Kitchin, R. and M. Dodge. 2007. "Rethinking Maps." *Progress in Human Geography* 31: 331-334.
10. Batty, M., A. Hudson-Smith, R. Milton, and A. Crooks A. 2010. "Map Mashups, Web 2 and the GIS Revolution." *Annals of the Association of American Geographers* 16: 1-13.
11. Goodchild, M. F. 2012. "GIScience in the 21st century." In *Advances in Geo-Spatial Information Science*, edited by W. Shi, M. F. Goodchild, B. Lees, and Y. Leung, 3-10. Leiden, The Netherlands: CRC Press.

Description and Assessment of Assignments

Your grade in this class will be determined on the basis of several different assessment tools:

Resume Assignment – 1 for a total of 2 points. The GIST Programs require all current students to post and maintain a public resume, short biography and recent photo on our shared GIST Student Community Blackboard site. With your permission, your photo and resume will be posted to the Spatial Sciences Institute website and your resume will be included in the GIST Resume Book. The latter is compiled annually and, along with our web presence, is used to promote our programs and more importantly, your skills, experience, and professional aspirations.

Access GIST Server Tutorial – 1 for a total of 1 point. The GIST Server will be used intensively throughout the semester. Therefore, you must ensure access to the server in the first week. To complete the exercise, you will refer to the Access GIST Server document.

Discussion Forums – 6 for a total of 11 points. These will focus on varying combinations of theory and practice and anticipate that you will post a minimum of six new messages (i.e. one per forum) and 12 replies to messages posted by your classmates (i.e. two per forum) at designated times throughout the semester.

Written Assignments – 5 for a total of 15 points. Each student is required to complete five written assignments for this class. These assignments will focus on the theory portion of the course as presented in weekly readings. The objective is to help you evaluate and integrate the information you have acquired from the course readings. Some of the assignments are required (for more detail, see the course schedule table at the end of this syllabus); the remainder of the assignments are elective. You are free to choose any two from the remaining assignments but you must complete and submit them for grading in the weeks specified at the end of this syllabus. If you complete more than five reading assignments, I will use your highest two scores for the remaining assignments to calculate your course grade.

Geodesy Quiz – 1 for a total of 4 points. One quiz will be administered towards the end of the geodesy module and will afford each of you the opportunity to demonstrate your knowledge and understanding of geodetic datums, coordinate systems, and map projections.

ArcGIS Tutorials – 10 for a total of 30 points. Most weeks you will be expected to work through one chapter in Price’s Mastering ArcGIS workbook. To demonstrate that you have completed each chapter, you will turn in brief text answers and/or a copy of some digital output from the final part of the exercise such as a map. In addition, you will be expected to offer each other advice and assistance on tutorials through Blackboard.

Final Project – 4 components for a total of 37 points. The final project will be your opportunity to integrate all that you have learned in the semester by framing a site suitability question, collecting the appropriate spatial and non-spatial data, importing the data into ArcGIS, producing and interpreting a series of maps that represent geographic phenomena related to your site suitability analysis, and indicating how you would proceed if you were to complete the site suitability analysis and what you anticipate would be the final results. To help facilitate this work, the final project will be broken up into four distinct components with their own points and deadlines as follows: (1) a single paragraph (300 word maximum) that describes the site suitability question and one or more tables summarizing criteria for your site suitability analysis (6 points); (2) an individual meeting for you to present and discuss your proposal and the various ways you might modify it (3 points); (3) a data report documenting the data you have identified and acquired for your project (6 points); and (4) the final report itself which must not exceed 10-12 single-spaced and typed pages plus figures, maps, tables and references and will count 22 points towards your final grade for the course.

Careful planning and a serious, consistent commitment will be required for you to successfully navigate the various deliverables in this and other GIST courses. The table below summarizes the SSCI 581 course assignments and their point distribution.

Grading Breakdown

| Assignment | Number | % of Grade |
|-----------------------------|--------|------------|
| Access GIST Server Tutorial | 1 | 1 |
| ArcGIS Tutorials | 10 | 30 |
| Discussion Forums | 6 | 11 |
| Final Project | 1 | 37 |
| Geodesy Quiz | 1 | 4 |
| Resume Assignment | 1 | 2 |
| Written Assignments | 5 | 15 |
| TOTAL | | 100 |

Assignment Submission Policy

Assignments will be submitted for grading via Blackboard using the due dates specified in the Course Schedule below. And finally, it is important to note from the outset that: (1) late postings and assignments will be docked one grade and no grade will be given for postings or assignments turned in more than one week late; and (2) no written work will be accepted for grading after 5:00 p.m. PT on the last day of classes (i.e. 8/14/15).

Additional Policies

Communications – This is a distance learning course, so most of our interactions will be asynchronous (not at the same time). All materials to be handed in will be submitted via Blackboard. I will also create Blackboard discussion forums throughout the semester that we will use for the aforementioned assignments and so we can discuss comments and issues related to the course assignments, exercises, and projects as the need arises.

In addition, I will send via email through Blackboard any notices that are time sensitive. Please be sure that you read as soon as possible all email sent from Blackboard or from me. Check now to make sure that mail sent from both the USC blackboard accounts and my private domain (warshaws@usc.edu) does not go into your junk mail!

While I am usually online and will probably respond to emails from students relatively quickly, I will endeavor to respond to all email within 24 hours of receipt, aiming for no more than 48 hours delay. In the rare case when I expect to be offline for more than 72 hours, I will post an announcement on the Blackboard site. That said, it is each student's responsibility to stay informed about what is going on in our course. In addition to email about time-sensitive topics, any important announcements will be posted on the Announcement page in Blackboard. Be sure to check these each time you log onto Blackboard.

Workload – This is a four credit, one semester course. Students should expect to spend 10-15 hours per week completing the work in this course.

Course Schedule: A Weekly Breakdown

| | Topics/Daily Activities | Readings and Homework | Deliverables/Due Dates |
|-----------------------|--|--|--|
| Week 1 5/18 | Introduction and Spatial Thinking | NRC (2006) <i>Learning to Think Spatially</i> . Washington, DC: National Academies Press (Ch. 1: Introduction, Ch. 2: The Nature of Spatial Thinking, and Ch. 3: Spatial Thinking in Everyday Life, at Work, and in Science) Resume Assignment Access GIST Server Assignment Discussion Forum 1 | No deliverables. |
| Week 2 5/25 | Spatial Primitive | DeMers (2009) <i>Fundamentals of Geographic Information Systems</i> , 4th edition, John Wiley & Sons, Inc. (Ch. 0: Spatial Learner's Permit and Ch. 2: Basic Geographic Concepts) Downs (1997) The geographic eye: Seeing through GIS? <i>Transactions in GIS</i> 2: 111-121. Price (2013) <i>Mastering ArcGIS</i> (6 th Ed.). New York, McGraw-Hill (Ch. 1: GIS Data and Ch. 2: Mapping GIS Data) Written Assignment 1 (Required) Price Chapters 1 & 2 Discussion Forum 2 | Submit Resume Assignment, Access GIST Server Assignment and Discussion Forum 1 no later than 5:00 p.m. on Tuesday, 5/26. Submit your response to Discussion Forum 1 no later than 5 p.m. on Thursday, 5/27. |

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| <p>Week 3 6/1</p> | <p>Geodesy and Datums</p> | <p>Bolstad (2012) <i>GIS Fundamentals: A First Text on Geographic Information Systems</i> (4th Ed.). White Bear Lake, MN: Eider Press (Ch. 3: Geodesy, Projections, and Coordinate Systems) Goodchild (2011) <i>Spatial thinking and the GIS user interface. <i>Procedia Social and Behavioral Sciences</i> 21: 3-9.</i> Price (2013) <i>Mastering ArcGIS</i> (6th Ed.). New York, McGraw-Hill (Ch. 3: Presenting GIS Data)</p> <p>Written Assignment 2 (Elective) Price Chapter 3 Discussion Forum 3 Final Project: Written Proposal</p> | <p>Submit Written Assignment 1, Price Chapters 1 & 2 and Discussion Forum 2 no later than 5:00 p.m. on Tuesday, 6/2. Submit your response to Discussion Forum 2 no later than 5 p.m. on Thursday, 6/4.</p> |
| <p>Week 4 6/8</p> | <p>Coordinate Systems and Map Projections Each student is required to attend an individual meeting.</p> | <p>Bolstad (2012) <i>GIS Fundamentals: A First Text on Geographic Information Systems</i> (4th Ed.). White Bear Lake, MN: Eider Press (Ch. 3: Geodesy, Projections, and Coordinate Systems) Price (2013) <i>Mastering ArcGIS</i> (6th Ed.). New York, McGraw-Hill (Ch. 4: Attribute Data and Ch. 11: Coordinate Systems)</p> <p>Price Chapters 4 & 11 Geodesy Quiz Final Project: Written Proposal Peer-feedback and Individual Meetings</p> | <p>Submit Written Assignment 2, Price Chapter 3, and Discussion Forum 3 no later than 5:00 p.m. on Tuesday, 6/9. Post your written proposal on your blog no later than 5:00 p.m. on Tuesday, 6/9. Submit your response to Discussion Forum 3 no later than 5 p.m. on Thursday, 6/11.</p> |
| <p>Week 5 6/15</p> | <p>GIST Domains</p> | <p>DiBiase (2007) Is GIS a wampeter? <i>Transactions in GIS</i> 11: 1-8 DiBiase et al. (2007) Introducing the first edition of Geographic Information Science and Technology Body of Knowledge. <i>Cartography and Geographic Information Science</i> 34: 113-118 DiBiase et al. (2010) The new Geospatial Technology Competency Model: Bringing workforce needs into focus. <i>URISA Journal</i> 22(2): 55-72 Price (2013) <i>Mastering ArcGIS</i> (6th Ed.). New York, McGraw-Hill (Ch. 6: Spatial Joins)</p> <p>Written Assignment 3 (Required) Price Chapter 6</p> | <p>Submit Geodesy Quiz and Price Chapters 4 & 11 no later than 5:00 p.m. on Tuesday, 6/15. Comment on classmates' written proposals no later than 5:00 p.m. on Thursday 6/17.</p> |

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| <p>Week 6 6/22</p> | <p>Geographic Information Systems</p> | <p>Bolstad (2012) <i>GIS Fundamentals: A First Text on Geographic Information Systems</i> (4th Ed.). White Bear Lake, MN: Eider Press (Ch. 1: An Introduction)</p> <p>Written Assignment 4 (Required) Discussion Forum 4</p> | <p>Submit Written Assignment 3 and Price Chapter 6 no later than 5:00 p.m. on Tuesday, 6/23.</p> |
| <p>Week 7 6/29</p> | <p>Geographic Information Science</p> | <p>Wilson & Fotheringham eds. (2008) <i>The Handbook of Geographic Information Science</i>. Oxford, Blackwell (Geographic Information Science: An Introduction)</p> <p>Goodchild (1992) Geographical information science. <i>International Journal of Geographical Information Systems</i> 1: 31-45</p> <p>Wright et al. (1997) Demystifying the persistent ambiguity of GIS as "tool" versus "science". <i>Annals of the Association of American Geographers</i> 87(2): 346-362</p> <p>Reitsma (2013) Revisiting the 'Is GIScience a science?' debate (or quite possibly scientific gerrymandering). <i>International Journal of Geographical Information Science</i> 2: 211-221</p> <p>Price (2013) <i>Mastering ArcGIS</i> (6th Ed.). New York, McGraw-Hill (Ch. 9: Network Analysis)</p> <p>Written Assignment 5 (Elective) Price Chapter 9 Discussion Forum 5 Final Project: Data Report</p> | <p>Submit Written Assignment 4 and Discussion Forum 4 no later than 5:00 p.m. on Tuesday, 6/30.</p> <p>Submit your response to Discussion Forum 4 no later than 5 p.m. on Thursday, 7/2.</p> |
| <p>Week 8 7/6</p> | <p>ArcGIS: Data Models</p> | <p>Bolstad (2012) <i>GIS Fundamentals: A First Text on Geographic Information Systems</i> (4th Ed.). White Bear Lake, MN: Eider Press (Ch. 2: Data Models)</p> <p>Wright et al. (1997) Demystifying the persistent ambiguity of GIS as "tool" versus "science". <i>Annals of the Association of American Geographers</i> 87(2): 346-362</p> <p>Price (2013) <i>Mastering ArcGIS</i> (6th Ed.). New York, McGraw-Hill (Ch. 10: Geocoding)</p> <p>Written Assignment 6 (Elective) Price Chapter 10 Final Project: Data Report Peer-feedback</p> | <p>Submit Written Assignment 5, Price Chapter 9 and Discussion Forum 5 no later than 5:00 p.m. on Tuesday, 7/7.</p> <p>Post your data report on your blog no later than 5:00 p.m. on Tuesday, 7/7.</p> <p>Submit your response to Discussion Forum 5 no later than 5 p.m. on Thursday, 7/9.</p> |

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| <p>Week 9 7/13</p> | <p>ArcGIS: Vector Analysis</p> | <p>Bolstad (2012) <i>GIS Fundamentals: A First Text on Geographic Information Systems</i> (4th Ed.). White Bear Lake, MN: Eider Press (Ch. 9: Basic Spatial Analysis) Reitsma (2013) Revisiting the ‘Is GIScience a science?’ debate (or quite possibly scientific gerrymandering). <i>International Journal of Geographical Information Science</i> 2: 211-221 Price (2013) <i>Mastering ArcGIS</i> (6th Ed.). New York, McGraw-Hill (Ch. 7: Map Overlay and Geoprocessing)</p> <p>Written Assignment 7 (Elective) Price Chapter 7</p> | <p>Submit Written Assignment 6 and Price Chapter 10 no later than 5:00 p.m. on Tuesday, 7/14.</p> <p>Comment on classmates’ data reports no later than 5:00 p.m. on Tuesday, 7/14.</p> |
| <p>Week 10 7/20</p> | <p>ArcGIS: Raster Analysis</p> | <p>Bolstad (2012) <i>GIS Fundamentals: A First Text on Geographic Information Systems</i> (4th Ed.). White Bear Lake, MN: Eider Press (Ch. 10: Raster Analyses and Ch. 11: Terrain Analysis) Kitchin & Dodge (2007) Rethinking maps. <i>Progress in Human Geography</i> 31: 331-334 Price (2013) <i>Mastering ArcGIS</i> (6th Ed.). New York, McGraw-Hill (Ch. 8: Raster Analysis)</p> <p>Written Assignment 8 (Elective) Price Chapter 8</p> | <p>Submit Written Assignment 7 and Price Chapter 7 no later than 5:00 p.m. on Tuesday, 7/21.</p> |
| <p>Week 11 7/27</p> | <p>Maps and Spatial Analysis</p> | <p>Bolstad (2012) <i>GIS Fundamentals: A First Text on Geographic Information Systems</i> (4th Ed.). White Bear Lake, MN: Eider Press (Ch. 13: Spatial Models and Modeling) Mitchell (2012) <i>The Esri Guide to GIS Analysis Volume 3: Modeling Suitability, Movement, and Interaction</i>, Redlands, CA: Esri Press. (Ch. 2 Finding Suitable Locations) Batty et al. (2010) Map mashups, Web 2 and the GIS revolution. <i>Annals of GIS</i> 16: 1-13</p> <p>Written Assignment 9 (Elective) Final Project: Final Report Draft</p> | <p>Submit Written Assignment 8 and Price Chapter 8 no later than 5:00 p.m. on Tuesday, 7/28.</p> |

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| Week 12 8/3 | Cartography and the History of Maps | Kimerling et al. (2012) <i>Map Use: Reading and Analysis</i> (7 th Ed.). Redlands, CA: Esri Press. (Introduction) Slocum et al. (2009) <i>Thematic Cartography and Geovisualization</i> (3 rd Ed.). Pearson / Prentice-Hall. (Ch. 2: A Historical Perspective on Thematic Cartography) Goodchild (2012) GIScience in the 21st century. In Shi et al. (eds) <i>Advances in Geo-Spatial Information Science</i> . Leiden, The Netherlands, CRC Press: 3-10 Written Assignment 10 (Elective) Discussion Forum 6 Final Project: Final Report Draft Peer-feedback | Submit Written Assignment 9 no later than 5:00 p.m. on Tuesday, 8/4. Post a draft of your final report on your blog no later than 5:00 p.m. on Tuesday, 8/4. |
| Week 13 8/10 | Future Trends of Maps and GIS | Bolstad (2012) <i>GIS Fundamentals: A First Text on Geographic Information Systems</i> (4 th Ed.). White Bear Lake, MN: Eider Press (Ch. 15: New Developments in GIS) Wilson & Fotheringham eds. (2008) <i>The Handbook of Geographic Information Science</i> . Oxford, Blackwell (Ch. 33: Geographic Information Science: The Grand Challenges and Ch. 34: Geographic Information Science: Where Next?) Final Project: Final Report | Submit Written Assignment 10 and Discussion Forum 6 no later than 5:00 p.m. on Tuesday, 8/11. Comment on classmates' final report drafts no later than 5:00 p.m. on Tuesday, 8/11. Submit a final version of your final report no later than 5:00 p.m. on Friday, 8/14. |

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The*

Center for Women and Men <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage <http://sarc.usc.edu> describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.