

**School of Information Sciences
University of Tennessee**

Syllabus

**INSC 590-003/004 Problems in Information Sciences
Introduction to Geospatial Technologies – Spring 2014
Friday, 1:25 – 4:25 PM EST
Dates of Semester: January 8 – May 6, 2014**

Instructor: Dr. Wade Bishop
Office: 442 Communications Building
Availability: Tuesdays 2:00-6:00; or by appointment
Contact: bbisho13@utk.edu

Graduate Teaching Assistant: Brittany Metzger

Course Description:

(3) Explores the creation, distribution and growth of geospatial data, highlighting their uses and misuses. Structured as an applications-based course where students learn how geospatial technologies are used to turn geospatial data into maps, tables and imagery through hands-on exercises and laboratory work.

Prerequisites

None.

Background

This is a *new* 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 felt a familiarity with various geospatial technologies would be vital to performing the jobs.

Learning Outcomes

At the conclusion of this course students will be able to:

- Explain the basic nature, characteristics, specification, types, acquisition, processing, organization and management of geospatial data in a geographic information system
- Describe, select and apply the basic functional and analytical capabilities of GIS
- Organize and visualize spatial data in ArcGIS version 10.x
- Describe and explain pertinent policy issues relating to the use of GIS in the public and private sectors.

Course Materials

Books:

1. Clarke, K. (2011). *Getting Started with Geographic Information Systems*. 5th Edition. Prentice Hall: New York. ISBN: 9780131494985
2. Gorr, W.L. and K.S. Kurland. (2013). *GIS Tutorial for ArcGIS 10.1 Basic Workbook 1*. 4th Edition. ESRI Press: Redlands, CA. ISBN: 9781589483354

Software: ArcGIS (Included in book #2 with a 180 day free trial). Software also available via UTK. Note: Apple users will need to run Windows emulator software.

Assignments and Evaluation Criteria

Format: All assignments should be typed and handed-in via Blackboard.

- **Exam 1** 100 points (20%)
- **Exam 2** 100 points (20%)
- **Research Proposal and GIS Project** 100 points (20%)
- **Exercises/Labs** 200 points (40%)

More detailed directions for each assignment will appear in Bb. Assignment due-dates are in the following course schedule.

Exams (40%): There will be two exams in this class, consisting of essay and application questions that are designed to evaluate your comprehension of GIS concepts as they relate to our class discussions, labs, and your reading. Clarity of expression is a factor in assessing these questions.

Research Proposal and GIS Project (20%): Do not ask me what I want your research project to be about. This is an opportunity for you to select a topic that interests you. *A one-page proposal of your paper is due at 9AM on Jan. 31st.* This proposal is worth 10 points. The proposal should be written in sentence form (not an outline) and should contain:

- A working title
- A brief description of what topic you plan to investigate
- A brief description of how you plan to go about investigating that topic
- A brief hypothesis of what you expect to find in your results (if appropriate)
- A bibliography of sources you have already found on this topic (5 minimum)
- A comprehensive description of where you are going to get data for analysis

The remaining 90 points for the assignment follows this rubric with a potential of 10 points for each section.

IS 590: Final GIS Project Rubric	10	8	6	4
Purpose	It is clear, early on, the author's purpose in writing the paper.	The purpose of the paper is clear, after reading through the entire introduction.	The author is vague on the purpose of the paper.	Purpose of the paper is unclear.
Literature Review	Sufficient background information and a clear review of the topic and why it is important to GIS is evident.	Adequate background information and a clear review of the topic and why it is important to GIS 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 GIS field and/or careers related to the topic.	Adequately discusses implications for the future practice of the GIS field and/or careers related to the topic.	Discussion of application to future GIS practice and/or careers is limited.	Does not discuss implications for future practice of the GIS field or careers related to the topic.
Maps	At least three publication quality maps generated in ArcGIS and relevant to the project's purpose	At least three quality maps with minor cartographic errors generated in ArcGIS and relevant to the project's purpose	At least three quality maps with minor cartographic errors generated in ArcGIS and not related to the project's purpose	At least three quality maps with major cartographic errors generated in ArcGIS and not related to the project's purpose
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 cover clearly 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

Total: ____ / 90 points

Exercises/Labs (20%): There will be nine exercises/labs during the semester (22 points each). The topic of the exercise will relate to the subject matter of the lecture and/or class. All of the labs involve using ArcGIS and require the use of book #2. Some of these will be applied in nature and others will be more interpretive/writing based.

Participation: Although participation isn't counted, any 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
- Watch/listen to the archive of the class you missed

Acceptable reasons for absence from class include:

- Illness
- Serious family emergencies
- Special curricular or job requirements (e.g., field trips, professional conferences) or participation in official university activities such as music performances, athletic competition or debate
- Military obligation
- Severe weather conditions
- Religious holidays
- 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.

Grades

At the end of the course, I will convert the points earned into a percentage:

93% and above	=	A
85% to 92%	=	B+
79% to 84%	=	B
75% to 78%	=	C+
70% to 74%	=	C
60% to 69%	=	D
below 60%	=	F

Incomplete—A temporary grade indicating that the student has performed satisfactorily in the course, but, due to unforeseen circumstances, has been unable to finish all requirements. An "I" will not enable a student to do additional work to raise a deficient grade. All incompletes must be removed within one semester, excluding the summer term.

Reading Materials

Readings for each week will be listed in the course schedule in advance, and it will be the responsibility of the student to complete the readings and contribute to the class discussions based on them. Reading materials outside of the required texts will be available on the Blackboard course site.

Academic Integrity: “The responsibility for learning is an individual matter. 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 all work presented be the student’s own work, not only on tests, but in themes, papers, homework, and class presentation. . . .” (Hilltopics 2004-2005 Student Handbook, The University of Tennessee, Knoxville, p. 40). Cheating, plagiarism, providing unauthorized help and other acts of dishonesty violate the rule of academic honesty; the offender will be subject to penalties as set forth in Hilltopics.

Special Needs: If you need course adaptations or accommodations because of a documented disability or if you have an emergency, please contact the Office of Disability Services at 2227 Dunford Hall, Knoxville, or at (865) 974-6087. This will ensure that you receive adequate services to meet your needs. Policy on Inclement Weather & Unforeseen Circumstances: If the university is officially closed, classes will be canceled. I may revise the schedule after the missed session. Any type of arrangements will be discussed with you in advance and announced in class or via e-mail.

CCI Diversity Statement (College of Communication and Information Bylaws, Section II-C): 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 (see <http://www.cci.utk.edu/diversity-statement> for CCI’s full Diversity Statement).

Course schedule (subject to change due to unforeseen circumstances)

* All readings should be completed prior to the lecture. Unless otherwise indicated, additional readings can be found on Blackboard under “Course Materials.”

Week 1 (Jan. 10)	<p><u>Introduction / What is GIS</u></p> <p>Read: Clarke, Chapter 1</p>
Week 2 (Jan. 17)	<p><u>GIS’s Roots in Cartography</u></p> <p>Read: Clarke, Chapter 2</p> <p>Skupin, A. (2000). From Metaphor to Method: Cartographic Perspectives on Information Visualization. <i>Proceedings of the IEEE Symposium on Information Visualization</i>. 91-97.</p>
Week 3 (Jan. 24)	<p><u>Maps as Numbers</u></p> <p>Read: Clarke, Chapter 3</p> <p>Goodchild, M.F. (1992). Geographic Data Modeling. <i>Computers and Geosciences</i>. 18(4): 401-408.</p> <p>Assignments Due: Lab Exercise (Chapter 1)</p>
Week 4 (Jan. 31)	<p><u>Getting the Map into the Computer</u></p> <p>Read: Clarke, Chapter 4</p> <p>Tripevich, N., Wernke, S.A. (2010). On-Site Recording of Excavation Data Using Mobile GIS. <i>Journal of Field Archaeology</i>. 35(4): 380-397.</p> <p>Assignments Due: Lab Exercise (Chapter 2)</p> <p style="text-align: center;">**One-page Final Project Proposal**</p>
Week 5 (Feb. 7)	<p><u>Geographic Database Management</u></p> <p>Read: Clarke, Chapter 5</p> <p>Assignments Due: EXAM 1</p>
Week 6 (Feb. 14)	<p><u>Spatial Analysis</u></p> <p>Read: Clarke, Chapter 6</p> <p>Grubestic, T.H., Murray, A.T., & Mack, E.A. (2011). Sex offenders, residence restrictions, housing, and urban morphology: A review and synthesis. <i>Cityscape: A Journal of Policy Development and Research</i>. 13(3): 7-31.</p> <p>Assignments Due: Lab Exercise (Chapter 3)</p>
Week 7 (Feb. 21)	<p><u>Making Maps with GIS</u></p> <p>Read: Clarke, Chapter 8</p> <p>Assignments Due: Lab Exercise (Chapter 4)</p>

Week 8 (Feb. 28)	<p><u>How to Pick a GIS</u></p> <p>Read: Clarke, Chapter 9</p> <p>Cayo, M.R. and T.O. Talbot. (2003). Positional error in automated geocoding of residential addresses. <i>International Journal of Health Geographics</i>. 2:10.</p> <p>Assignments Due: Lab Exercise (Chapter 5)</p>
Week 9 (Mar. 7)	<p><u>GIS Usability and E-government applications</u></p> <p>Assignments Due: EXAM 2</p>
Week 10 (Mar.14)	<p>NO CLASS MEETING</p> <p>Assignments Due: Lab Exercise (Chapter 6) <i>don't do A6-3.</i></p>
** Spring Break, March 17-21**	
Week 11 (Mar. 28)	<p><u>GIS use in LIS</u></p> <p>Assignments Due: Lab Exercise (Chapter 7)</p>
Week 12 (Apr. 4)	<p><u>Open Source GIS</u></p> <p>Assignments Due: Lab Exercise (Chapter 8)</p>
Week 13 (Apr. 11)	<p><u>Careers and Collaborations: Partnerships in Archives, Data Centers, and Libraries</u></p> <p>Read: Clarke, Chapter 11</p> <p>Assignments Due: Lab Exercise (Chapter 9)</p>
Spring Recess April 18	
Week 14 (Apr. 25)	<p><u>Course Wrap-Up</u></p> <p>Final Presentations</p> <p>Assignments Due: **Final Projects**</p>