

**School of Information Sciences
University of Tennessee**

Syllabus

**INSC 516-001/002
Introduction to Geospatial Technologies – Spring 2016
Tuesday, 6:30 – 9:10 PM EST
Dates of Semester: January 13 – April 29, 2016**

Instructor: Dr. Wade Bishop
Office: 442 Communications Building
Availability: Mondays 8:00-12:00; or by appointment
Contact: wade.bishop@utk.edu

Graduate Teaching Assistant: Elizabeth Ellis

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 elective was 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.

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; and
- Describe and explain pertinent policy issues relating to the use of GIS in the public and private sectors.

Information Technology Expectations

Although this elective does not require any pre-requisites, in past versions of the course students suggested the IT skill expectation be more clearly stated and links to remedial tutorials provided (if needed). You will use other software than GIS in this class. You will use Excel, Adobe Reader, and something to capture screen shots.

You will use Excel. If you have not used Excel, you should familiarize yourself with this technology:

<https://oit.utk.edu/Training/Pages/default.aspx>

- Go to Excel
- Take the Microsoft Course
- Log-in
- Take Excel courses, skip over basics if not needed. The book explains exactly what to do, but if Excel is new to you please consider taking the courses through OIT.

You will be asked to submit screen shots of assignments. This means you should know how to hit PrtScn and copy and paste into any image software, or use a snipping tool.

Editing maps for your final project will look more professional in other software (e.g., Adobe Illustrator).

Course Materials:

Book:

Clemmer, G. (2013). *The GIS 20: Essential skills* (2nd ed.). Redlands, Calif: ESRI Press.

Software:

UTK OIT has ESRI ArcGIS Desktop, Engine, Mobile, Server. For this class, download ArcGIS 10.3.1 from UTK OIT (<https://oit.utk.edu/hardware-software/software-purchases/Pages/default.aspx>). The book was written for 10.1 and includes instructions on how to get a 180 trial, but as a UT student you get an annual license with greater functionality and can be renewed annually as long as you are affiliated with UT. You choose.

The instructions to download from OIT are straightforward. They are found in the document *ESRI ArcGIS Desktop 10.3.1 Installation Instructions - July 2015*. Part of the download process is contacting OIT and asking for the authorization file to be sent to you. Again, **YOU** will NEED to call OIT (865-974-9900).

Note: Apple users will need to run Windows for this to work (BootCamp; Parallels) visit ESRI support pages for more information (<http://edcommunity.esri.com/software-and-data/mac-os-support>). The ESRI software only works on Windows. Call OIT if you need assistance with that.

Reading Materials

Further scholarly and professional readings will be provided each week in advance of each class. Each student will be responsible for completing the readings and contributing in class discussion board activities and meetings. Reading materials outside of the required texts will be available on the Blackboard course site.

Assignments and Evaluation Criteria

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

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

The Lab due-dates are in the following course schedule. Each cadre of labs should take approximately an hour. Some labs may take only 10 minutes, some labs much longer. There is no penalty for completing all the labs early and you are encouraged to work ahead as this will give you more time on the final GIS Project.

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.

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 Feb. 1st.* This proposal is worth 10 points. The proposal should be written in sentence form (not an outline) and should contain the following:

1. Select and describe a topic, with a working title, brief description of what you plan to investigate, how you plan to investigate, a hypothesis of what you expect to find, and literature review for consideration (at least 5 sources). Please provide a description of how you will get the data to do your analyses. Pick a topic that will benefit your future and that you will enjoy.

The remaining 90 points for the assignment results from these items outline in the rubric below.

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 project 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. Many have been used in ePortfolios.

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

IS 516: Rubric	12	8	4	0
Purpose (Due Feb 1)	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 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.
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: ____ / 100 points

Labs (40%): There will be twenty exercises/labs during the semester (10 points each). No late labs will be graded due to rigorous schedule.

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.

Academic Integrity:

“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. (See Standards of Conduct Honor Statement. Additional resources are available at <http://www.lib.utk.edu/instruction/plagiarism/>”). (<http://dos.utk.edu/files/Hilltopics2013-2014.pdf>; p. 45).

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. Readings will be updated two weeks prior to each lecture.

Week 1 (Jan. 19) Install software(s)	<u>Introduction / What is GIS</u> Read: Maguire, D. J. (1991). An overview and definition of GIS. <i>Geographical information systems: Principles and applications</i> , 1, 9-20.
Week 2 (Jan. 26) <i>Ch 1, 2, & 3 due</i>	<u>GIS's Roots in Cartography</u> Read: Crampton, J. W., & Krygier, J. (2005). An introduction to critical cartography. <i>ACME: an International E-journal for Critical Geographies</i> , 4(1), 11-33.
Week 3 (Feb. 2) <i>Ch 4, 5, & 6 due</i>	<u>Maps as Numbers</u> Read: Assignments Due: **One-page Final Project Proposal** http://factfinder.census.gov/faces/nav/jsf/pages/download_center.xhtml
Week 4 (Feb. 9) <i>Ch 7 & 8 due</i>	<u>Getting the Map into the Computer</u> Read: Tripcevich, N., Wernke, S.A. (2010). On-Site Recording of Excavation Data Using Mobile GIS. <i>Journal of Field Archaeology</i> . 35(4): 380-397.
Week 5 (Feb. 16) <i>Ch 9, 10 & 11 due</i>	<u>Geographic Database Management</u> Read: Assignments Due: EXAM 1
Week 6 (Feb. 23) <i>Ch 12, 13 & 14 due</i>	<u>Spatial Analysis</u> Read: 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.
Week 7 (Mar. 1) <i>Ch 15 & 16 due</i>	<u>Making Maps with GIS</u> Read:
Week 8 (Mar. 8) <i>Ch 17 & 18 due</i>	<u>How to Pick a GIS</u> Read: 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.
** Spring Break, March 14-18**	
Week 9 (Mar. 22) <i>Ch 19 & 20 due</i>	EXAM 2 Week – NO CLASS Assignments Due: EXAM 2

Week 10 (Mar.29)	<u>GIS Usability and E-government applications</u>
Week 11 (Apr. 5)	<u>GIS use in LIS</u>
Week 12 (Apr. 12)	<u>Open Source GIS</u>
Week 13 (Apr. 19)	<u>Careers and Collaborations: Partnerships in Archives, Data Centers, and Libraries</u> Read:
Week 14 (Apr. 26)	<u>Course Wrap-Up</u> Final Presentations Assignments Due: **Final Projects**