Geography 309/609 Sec. 001
Introduction to Geographic Information Systems
Fall 2014
TR 11:00 – 12:15
313 Classroom Building

Instructor

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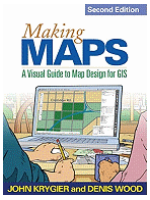
Readings



Making Maps 2nd Edition. John Krygier & Denis Wood. Guilford Press, 2011.

There are also supplemental texts. These texts will range widely across GIS, cartography and mapping. You should read and annotate these readings with your comments, questions or reactions. This activity will count toward class participation, and you can expect questions on them in quizzes and exams.

Course Description

Today, users of mapping and GIS have more choices available than ever before. These include not just the traditional "Big GIS" such as Esri's ArcGIS products, but a dizzying array of competing technologies, many of them online, mobile (smartphone apps), open source, cloud-based or "do-it-yourself" (DIY) data collection (drones, helium balloons and sensors). New players such as Google, Apple, and CartoDB are also significantly shifting the playing field.

This course offers a guide through this landscape. Our motto is "The right GIS at the right time." This motto acknowledges the diversity of GIS now possible, the range of contexts in which we might use it, and the mobile or untethered nature of GIS.

The course will combine instruction in operating Esri's ArcGIS 10 desktop product suite, an introduction to open source GIS such as TileMill/Mapbox, Quantum GIS (QGIS), GeoCommons, OpenStreetMap etc. with the necessary critical understanding of GIS as practice. GIS is a diverse topic, and we will learn principles of cartography, geovisualization, geospatial databases, spatial analysis, and newer developments such as the spatial "geoweb" and open source data creation and sharing.

The course includes both lecture and lab components. Some labs will take place online, and not in the classroom (most may be completed at home or on campus).

Course Learning Outcomes

By the end of this course you will be both able to (1) **identify candidate technologies for your problem**; (2) **identify and secure appropriate data**; (3) **successfully develop a solution using appropriate GIS and mapping technologies**; and (4) **critique and assess maps & GIS products**, including your own. Additionally, the class will emphasize a key skill: (5) **finding solutions to problems**. By the end of the semester you should be able to not only comprehend GIS but solve problems of GIS applications and evaluate and recommend specific solutions to real-world problems.

Description of Course Assignments

In addition to the scheduled Quizzes, this course includes two exams, the virtual labs, a mid-semester project, and a Final Project. The Quizzes are short answer format of about 10 questions each, and cover comprehension of material from lecture and readings (non-cumulative, ie since the previous quiz). Some questions may involve the computer. Virtual labs can be performed anywhere you have an Internet connection and a reasonably recent laptop. They should be completed on the day scheduled (Friday) or over the weekend. Project Labs are larger-scale and more integrative, and are to be completed within one week of assignment. They will involve determining specific answers through mastery of GIS techniques. They may involve skills and knowledge from any part of the course up to that point. Exams are written answer of various lengths, with points clearly indicated.

Class participation is made up of class participation (question, comment, etc.), discussion participation, the annotations on the Supplementary Readings, and the completion of all assignments in a timely manner.

The Final Project is collaborative (2 person groups) and mechanisms for assigning a fair grade will be provided to you.

Grading

Your final letter grade will be derived from the following graded components. Where there is a borderline grade, participation in class discussions and attendance will be used as a deciding factor.

	Grade
Class Participation	10%
Labs (9 X 3%)	27%
Midterm Project	12%
Quizzes (5 X 1%)	5%
Exam	20%
Final Project	20%
Presentation	6%
TOTAL	**100%**

Class Schedule

Week	Topic	Activities
1 Thurs Aug 28	No Class—Instructor at Conference	**Read**: Krygier & Wood pp. i-18 **Obtain**: FulcrumApp for iPhone or Android
2 Tues Sept. 2 Thurs Sept 4	Introduction and Course Description: "The Right GIS at the Right Time" The Power of Maps Collecting Primary Data FulcrumApp	**Read**: Stone Map or be Mapped, K&W p.4-5 **Activity**: Esri Chap 3 **Read**: Crampton 2013 **Lab 01** **FulcrumApp/Google Earth**
3 Tues Sept 9 Thur Sept 11	Drone, Kite and Balloon Mapping Tilemill→MapBox **Guest Speaker: Sean Conway** **Quiz 1**	Drone demos **Lab 02** **Drone Mapping**
4 Tues Sept 16 Thurs Sept 18	Nature of Geospatial Data CartoDB Maps Projections, Scale, Coordinate Frameworks	**Read**: Krygier & Wood Chap 3 **Read**: Esri Chap 13 **Ref.**: K&W Chap 5 **Lab 03** **ArcGIS Projections**
5 Tues Sept 23 Thurs Sept 25	Data Management/ArcCatalog Classifying, Querying Joining Attribute Tables Data Analysis & Geoprocessing, Sampling Spatial Autocorrelation **Quiz 2**	**Read**: Esri Chap. 9 **Read**: K&W p150-165 **Lab 04** **Geostatistics**
6 Tues Sept 30 Thurs Oct 2	Open Source Solutions Mapbox/Tilemill, CartoCSS Guest Speaker	Mid-Semester Project Assigned **Guest Speaker Ate Poorthuis**
7 Tues Oct 7 Thurs Oct 9	Collecting Secondary Data 1 Census Bureau 2 Remote Sensing Data **Quiz 3**	**Read**: K&W p186-199 **Lab 05** **Secondary Data** Mid-Semester Project Due

8 Tues Oct 14 Thurs Oct 16	Local Community Mapping, Guest Speaker **Mid-Semester Exam**	Guest Speaker Boyd Shearer
9 Tues Oct 21 Thurs Oct 23	Geocoding Image Registering	**Lab 06** **Geocoding and Image Registration**
10 Tues Oct 28 Thurs Oct 30	Cartographic Principles, Map Pieces Graphical Excellence Figure-Ground, Visual Illusions & Comics	**Read**: K&W p. 108-119, Chap 7 **Lab 07** **Map Design Excellence**
11 Tues Nov 4 Thurs Nov 6	Geodatabases **Quiz 4**	**Read**: Esri Chap 14 **Lab 08** **Geodatabases**
12 Tues Nov 11 Thurs Nov 13	**Final Project Assigned** Map Assessment & Critique Critical GIS Interpreting Maps	**Read**: K&W p28-33 **Thursday: Lab 09** **Map Assessment**
13 Tues Nov 18 Thurs Nov 20	Meet in Basement Hub, WT Young Library **Quiz 5** (Tues) Work on Final Project/Visit to GEO109 ~~**Quiz 5**~~	**Read**: ~~GIS Ontologies~~
14 Tues Nov 26-29	Tuesday: Work on Final Project (Lab OPEN) THANKSGIVING—No Classes Thursday	
15 Tues Dec 2 Thurs Dec 4	Work on Final Project and Presentations	Work on Final Project
16 Tues Dec 9 Thurs Dec 11	Student Presentations (6%)	
	Final Project Due Dec. 16, 2014 5:00PM	

While every effort is made to follow the above schedule, the right is reserved to make changes where necessary. Any changes will be announced in class and students will not be penalized for them.

Letter grade (Undergraduates)	Letter grade (Graduates)
A 90-100% (exceptional work). GPA: 4.0 **B** 80-89.4% (above average work). GPA: 3.0 **C** 70-79.4% (average work). GPA: 2.0 **D** 60-69.9% (below average work). GPA 1.0 E <60% (failing). GPA 0.0	**A** 90-100% (exceptional work). GPA: 4.0 **B** 80-89.4% (above average work). GPA: 3.0 **C** 70-79.4% (average work). GPA: 2.0 **E** <60% (failing). GPA 0.0
	Graduate students will receive additional reading assignments, and more challenging and encompassing projects

Important Notices

What Does the Class Participation Grade Mean?

Grade of C: If you do and write comments on all the readings and attend class you can expect this grade

Grade of B: If you do the above, plus comment/question/discuss regularly in class

Grade of A: If you do the above, plus do a knockout work on assignments

Attend class

1. The majority of your grade depends on your preparation for, and engagement in, class discussions and assignments;
2. Your success in completing the exercises, projects, and exams largely depends on how well you understand the material that we will cover in lecture and in virtual labs;
3. Throughout the semester, I may assign work to be completed and handed in during class or at our next meeting; you will be responsible for submitting these for credit even if you do not attend class; and
4. In the event of an absence, you should consult the syllabus regarding what material or deadlines you may have missed.

Students need to notify the professor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit “reasonable cause for nonattendance” by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754). Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request “appropriate verification” when

students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Meet deadlines

Meeting deadlines is an important professional practice. Consult the course schedule, above, for the due dates of the course assignments. A 10-percent deduction will be applied to the final score of your assignment for submissions after the deadline **on the same calendar day**, with an additional 10-percent deduction for each additional calendar day the assignment is late. If the assignment is not delivered by the next class meeting, the assignment will not be accepted.

Be honest

This course, if successful, will expose you to a variety of concepts and techniques. You are expected to draw upon these various ideas, but you must be transparent and honest about your use of these ideas. Please get help if you're uncertain about this expectation! Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the *Code of Student Rights and Responsibilities*. Complete information can be found at the following website: http://www.uky.edu/Ombud. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of *Student Rights and Responsibilities* (available online http://www.uky.edu/StudentAffairs/Code/part2.html) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are

used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these *Rules* shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).
Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Be respectful

Students should at all times be respectful of fellow students, the professor or teaching assistant(s), and the University of Kentucky. Some basic reminders:

- Silence all mobile devices.
- Show up on time. Late arrivals (and unnecessary) early departures are rude and disruptive.
- Put away your reading material (other than perhaps readings necessary for the lecture/course).
- Talking and whispering during class is disrespectful to the professor and fellow students and makes it more difficult for those who want to learn to do so.
- Be attentive to and respectful of other students' contributions to class discussions. Discussion must not include attacks of a personal nature, including denigrating another on the basis of skin color, sex, religion, sexual orientation, age, national/regional origin or other such irrelevant factors.

Your Rights

Know your rights! You have the right to take reasoned exception and to voice opinions contrary to those of the instructor and/or other students. You have the right (and the instructor has the responsibility) to all ensure that all academic discourse is respectful and civil. This precludes ad hominem attacks or denigrating another on the basis of race, sex, religion, sexual orientation, origin, or age.

UNIVERSITY POLICIES

University policies will be adopted in this class including policies on academic honesty. University Senate rules state that "Students shall not plagiarize, cheat, or falsify or misuse academic records" (S.R. 6.3.1). What is plagiarism?

Plagiarism: "When students submit work purporting to be their own, but which **in any way** borrows ideas, organization, wording or anything else from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

"Plagiarism includes reproducing someone else's work, whether it be published article, chapter of a book, a paper from a friend or some file, or whatever. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own [ie., paraphrasing]. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

“When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these *Rules* shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain” (S.R. 6.3.1, http://www.uky.edu/StudentAffairs/Code/Section%20VI.pdf).

Attendance. Attendance is expected in this class. The university provides the following acceptable reasons for excused absences: A. Significant illness; B. death in the family or household; C. university sanctioned trips (provide appropriate documentation prior to absence); D. major religious holidays. Please provide appropriate documentation in writing. Further information is available in S.R. 5.2.4.2 (http://www.uky.edu/StudentAffairs/Code/Section%20V.pdf).

For students with special needs:
If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, email address: jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.