GEOG 112 – SECTION 001: CARTOGRAPHY
Fall 2009

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General Class Schedule & Location
Tuesday and Thursday 8am – 9:15am
Classroom: 158 Science Hall

Course Description
This course is intended to introduce students to the fundamentals of map use and interpretation, map design, and map production. While we all use maps and map-like graphics nearly every day, we often do so without considering if we are using them correctly or if they are misleading or inaccurate. This course will provide the foundation necessary to critically evaluate maps and pseudo maps (like those you see in newspapers and on television) and to produce accurate and visually pleasing cartographic displays which convey information in a manner which enables easy interpretation.

Course meetings will be primarily lecture-based, with activities and hands on exercises interspersed throughout. You will become familiar with ArcGIS, an industry-standard geographic information systems software package, as well as general graphic design terms and concepts. Through class exercises you will produce your own thematic maps using a variety of software packages and techniques. You will also become familiar with geographic data – how to describe it, find it, use it, and select the data appropriate for a given task. This course should enable you to further pursue courses in geospatial techniques, but will also help you use maps and other cartographic displays, and also realize their limitations.

Course Goals
By the end of this course you will:

(a) Understand what makes a map a map, and be able to quickly evaluate maps for utility and accuracy in a variety of circumstances.
(b) Use maps and map-like displays to answer questions and solve real-world problems.
(c) Identify and create a variety of different map types using real-world base data and industry-standard software packages.

Course Prerequisites and Requirements
There are no prerequisites for this course, but the assumption of this instructor is that each student in the class is able to complete basic computer tasks such as file management on Windows PCs. I will only provide initial assistance in basic computer problems, particularly with regards to file management ("I can't find my file" or "my file just disappeared" are generally not acceptable excuses or problems in my geotechniques courses).

Academic Honesty

Students at Indiana State University are expected to accept certain personal responsibilities that constitute the "standard" for behavior in a community of scholars, and this course is no exception. The "Sycamore Standard" entails a number of things which can (and should) be reviewed here: http://www1.indstate.edu/studentaffairs/docs/syc-strd.pdf

Students with Special Considerations

Indiana State University seeks to provide effective services and accommodation for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, you are required to register with Disability Support Services at the beginning of the semester. Contact the Director of Student Support Services. The telephone number is 237-2301 and the office is located in Gillum Hall, Room 202A. The Director will ensure that you receive all the additional help that Indiana State offers. If you will require assistance during an emergency evacuation, notify me immediately. Look for evacuation procedures posted in your classrooms.

Laptop Not Required for Course: Usage Permitted: While there will be no assignments or examinations for which the laptop will be used, your use of a laptop is generally permitted as long as such usage remains within the bounds of the Code of Student Conduct and it conforms to the provisions of its use as laid out in this syllabus. There may be occasions where laptop usage is forbidden and if that occurs, failure to comply with this direction will be viewed as a violation of the Code of Student Conduct and you will be marked absent for that class meeting.

Course Management

We will be using Blackboard, Indiana State's online course management system, in this course. When you enroll for the course you are automatically granted access to the GEOG 112 Blackboard page. To login to the page, please go to https://blackboard.indstate.edu, and login with your Sycamore login and password. All emails from me to you will use ISU's e-mail system and will be sent to your ISU e-mail account. ***NOTE THAT I DO NOT USE GROUPWISE: any e-mail sent to me with "isugw.indstate.edu" after the "@" symbol will not reach me and will be lost to the e-mail netherworld***. If you use a different email system, be sure to forward your ISU account to that other address. Note as well that e-mailing me through MyISU Portal and Blackboard will not work properly. *I apologize, but I will not be able to honor requests to use other e-mail directly*. All assignments, handouts, assignment scores, and lecture outlines will be available through Blackboard. Lecture outlines will be available immediately before the scheduled lecture and will remain posted throughout the semester. Specific readings, assignments and events will be posted on the announcements and calendar pages on Blackboard. *Be sure to check Blackboard daily.*

Course Texts & Readings

There is one required book for this course, which is available at the Indiana State University bookstore in the Hulman Student Center:

- **Slocum, McMaster, Kessler & Howard**. 2009. Thematic Cartography and Visualization. Prentice Hall. [Cloth] ~$133.00, new, ~$99 used. (As of 8/26 there were at least 6 used copies in the bookstore)

In addition, we may have assigned readings during the week, generally only one or perhaps two, made available for download as PDF documents on Blackboard. With the exception of the first meeting, course readings should be completed *before* the assigned date.

Course Requirements

A) Attendance (no points awarded):

I will take role in this course, either briefly at the start of class, or through classroom activities which involve submitted materials. Attendance is mandatory, but I am aware that real life sometimes gets in the way of how we think our ideal lives should be (i.e., stuff happens and schedules get FUBAR). Therefore, every student is allowed three absences over the semester, for whatever reason. Take your absences carefully, though, as for every missed class beyond these three you will be docked 5% (that's right five percent) of you final grade, regardless of the reason. This means that if you are sick, you will have to use your allotment of 3 absences or face a penalty. NOTE: Certain classroom and communication behavior may lead you to being marked as absent, even if you are physically in the classroom. Please see the N.B. page, below.

B) Lab Exercises (200 points):

Approximately every-other week we will have hands-on laboratory exercises in-class. These exercises will include homework which may require you to work in the lab in 158 Science Hall on your own time. Lab exercises are worth variable credit, but generally will be valued at 20-40 points, making up 200 total points.

C) Map/Infographic Critiques (100 points):

Much of the spatial and quantitative communication we are exposed to on a daily basis comes to us in the form of maps and other map-like displays. Using the material you learn in this course, you will be required to submit three map/infographic critiques over the course of the semester (see the semester schedule pages). An ideal example will be provided for you on Blackboard at least two weeks before the first map critique is due. The first map critique is worth 20 points, while the last two are worth 35 points apiece, for a total of 100 points.

D) Exams (200 points)

The TWO EXAMS for the course will contain a mixture of multiple choice, true/false, graphic interpretation/critique, and short answer/essay questions. Each exam will be worth a total of 100 points and will take place on Blackboard. A note on cheating: I consider cheating to be the copying of other student's answers and/or assisting others when an exam should be completed individually. I do NOT tolerate cheating. Cheating will result in decisive action according to the Academic Honesty policies of Indiana State University (see: http://www.indstate.edu/academicintegrity/studentguide.pdf)

Exam make-up policy: Make-up exams are offered only to those who have made previous arrangements with me and can provide a *documented* and worthy excuse. Should a life circumstance occur at exam time, you need to contact me by email or telephone to let me know you will require a make-up. THIS NOTIFICATION NEEDS TO OCCUR AS SOON AS YOU CAN, BUT NO LATER THAN 24 HOURS AFTER THE EXAM WAS ADMINISTERED, and preferably should be before the exam. Also, though circumstances may be traumatic, do not be surprised if I ask for official confirmation of the event before excusing your absence. Sleeping-in or forgetting an exam are not excuses for which make-ups are offered.

Exam review: Before an exam, please feel free to ask questions about the material in class or via email, or come to my office hours; exam review sessions will not be provided. After the exam I do not go over exam questions in class, though I am always willing to entertain any specific questions. Also, please feel free to contact me directly with specific issues after class, during office hours, or via email.

E) Classroom Activities/Short Homework Assignments (100 points)
From time to time we will have brief activities/group discussions in the classroom. Each of these will have from between 2 and 15 points awarded to those present and active in the activity. Short homework assignments should take no more than an hour of your time.

F) Other Course Options (20 points):
Only two extra-credit opportunities will be provided during the semester, in the form of one question at the end of each of the exams which will be worth an extra 10 points (for a total of 20 points, or 4% of your total grade). These questions may be quite difficult, so it is a good idea to complete other questions first. Other extra-credit work will not be considered except under extraordinary circumstances.

Course Grading
Your grade will be calculated using the following point system:

Lab Exercises = 200 points
Map/Infographic Critiques = 100 points
Exam 1 = 100 points
Exam 2 = 100 points
Classroom Activities/Short Homework Assignments = 100 points

TOTAL POTENTIAL = 600 points + 20 Extra-credit points

I will add up your total points, including any earned extra-credit points (available on the exams only), and divide that number by 600, yielding your percent grade. I will then assign your grade according to the following scale:

93 – 100% = 4.0
89 – 92% = 3.7
85 – 88% = 3.5
81 – 84% = 3.0
78 – 80% = 2.7
74 – 77% = 2.5
71 – 74% = 2.3
67 – 70% = 2.0
64 – 66% = 1.7
61 – 63% = 1.5
59 – 60% = 1.3
56 – 58% = 1.0
53 – 55% = 0.7
50 – 52% = 0.5
0 – 50% = 0.0

When calculating final grades, it is my policy to round up only on fractional percentages of 0.5 or more. In other words, if your final grade works out to an 80.5%, it would be rounded up to 81% and you would be assigned a final grade of 3.0 on the above scale. Similarly, if your final grade was 89.3% you would *not* receive the round up and would be assigned a grade of 3.7.

N.B. THE FOLLOWING POINTS & POLICIES ARE VERY IMPORTANT!!!!

1) **PLEASE INFORM THE INSTRUCTOR AS SOON AS POSSIBLE IF YOU WILL HAVE ANY CONFLICT WITH CLASS MEETINGS AND EXAM PERIODS DUE TO RELIGIOUS, ATHLETIC, OR OTHER REASONS.**
2) **IF YOU HAVE SPECIAL NEEDS, PLEASE INFORM THE INSTRUCTOR AS SOON AS POSSIBLE.** In order to accommodate eligible student disability requests, I need to have confirmation from ISU of your needs before the first exam.
3) **N.B. Class policies:**
   - Wikipedia & Electronic Resources: While Wikipedia and other online resources can be incredibly helpful, they are subject to a range of problems that printed and reviewed media (such as journal articles, newspapers, and books) are not. Therefore, in this course, Wikipedia should only be used as a springboard to more formal sources of information. If you are curious or need to know fast-facts about a subject, location, or idea in the class, by all means use Wikipedia. However, Wikipedia sources are unacceptable in papers and assignments. Please make the effort to find conventional resources (if you need a hand finding them or evaluating a source, feel free to contact me!).
   - Communication (especially e-mail): Electronic communication is quickly becoming the standard method of rapid communication, both socially and professionally. Because we contact friends and family online all the time, online communication often becomes informal. However, because part of your education at ISU includes *professionalization,* all e-mails to me and to other students must include: (1) a greeting (e.g., "Dear ____," "Hello," or the person's name, BUT NOT: "Hey," "Whatup," etc.), (2) an e-mail body that clearly describes your concern, question, or problem and is free of AIM/l33tspeak, and (3) a closing (e.g., "thank you," "sincerely," or even "thanks"). *I am not an overly formal fellow, but e-mail etiquette is something we can all benefit from.*
   - Citations: If you use a source, including online material (on Blackboard or otherwise) and the textbook, in your work, you must insert a fully-formed citation. Citation guidelines are available on Blackboard, please look them over so you know how to cite the work of others, and when it is necessary to do so (which is nearly always). Malformed citations or the lack of a citation when one is necessary WILL result in a significant reduction of your grade. Again, any and all questions about this are welcome! Similarly, the source of any geographic data or other information MUST be recognized on your lab exercises and any other material you turn in.
   - Spelling, Grammar, & Punctuation: We all make mistakes when creating written communications – it is not an easy undertaking. Despite this, it is very important that we all strive to avoid typos, grammar mistakes, and punctuation problems as we will use these skills for the rest of our lives. Therefore, I will tolerate the occasional mechanical issue in written work provided there is no more than one error of each type on each page. Obviously, because the final exam is written during the exam period by hand or hastily on the computer, I will allow more errors; I will tolerate two errors of each type per question. More mechanical errors than these limits will result in lost points.
   - Electronics in the Classroom: I love my iPod, and my cellphone is a pretty important tool as well, but they will REMAIN OFF while I am lecturing or during class discussions. *Similarly, your electronic gear will be off as well.* Receiving text messages or phone calls during class is unprofessional and unacceptable. *Laptop computers* can be used for note-taking if you must, but as slides will be available before class on Blackboard you may find lugging around a computer undesirable.
     - Each and every time your cellphone rings you will be marked absent.
     - If you are using your laptop or lab workstations to access material not relevant to class during class periods, you will be marked absent.
     - If you attempt to use your iPod or similar device during class you will be marked absent, unless I ask you to use such a device.

TENTATIVE COURSE SCHEDULE

(Changes/Updates will be posted on Blackboard)

PART 1 – INTRODUCTION TO MAPPING AND CARTOGRAPHY

Week 1. Introduction to the Course and the Discipline of Cartography

- Thursday, August 27th: Syllabus, Course Policies, What is a Map?
    - Readings: Slocum, Chapter 1 (pages 1-18).

Week 2. Introduction to Cartography, continued

- Tuesday, September 1st: History of Cartography
    - Readings: Slocum, Chapter 2 (pages 19-33)
- Thursday, September 3rd: Lying with Maps and Where Am I?
    - Reading: Monmonier, Chapter 7 (pages 87-112 – ON BLACKBOARD) & Slocum, Chapter 7 (pages 113-128)

Week 3. Elements of a Map & Cartographic Design

- Tuesday, September 8th: Map Elements. (WARNING: HEAVY READING DAY)
    - Readings: Slocum, Chapters 5 (pages 76-95) & 11 (pages 188-210), Monmonier, Chapter 2 (pages 5-24 – ON BLACKBOARD)
- Thursday, September 10th: Cartographic Design and Color Theory
    - Readings: Slocum, Chapter 12 (pages 211-231) & Slocum, Chapter 10 (pages 173-187)
    - Check Blackboard for Map Critique Example

Week 4. (Making it so) The Earth is Flat: Map Projections

- Tuesday, September 15th: Elements of and Types of Projections
    - Readings: Slocum, Chapter 8 (pages 130-152)
- Tuesday, September 17th: What Kind of Projection, and When Should I Use It?
    - Readings: Slocum, Chapter 9 (pages 153-172)

Week 5. Scale & Generalization, Map Reproduction

- Tuesday, September 22nd: Scale and Generalization
    - Reading: Slocum, Chapter 6 (pages 96-112)
- Thursday, September 24th: Problems Printing, E-mailing, and Posting a Map (*not a how-to*)
    - Reading: Slocum, Chapter 13 (pages 232-250)
    - **ASSIGNMENT DUE:** First Map Critique

PART 2 – MAPPING TECHNIQUES (Lab Exercises Begin)

Weeks 6 & 7. Choropleth Mapping

- Tuesday, September 29th: Introducing the Choropleth Map
    - Reading: Slocum, Chapter 14 (pages 251-270)
- Thursday, October 1st: ArcGIS introduced
    - Reading: **NO Reading**
    - **Lab Exercise 1 (20 points)**, to be completed on your own if more time is needed.
- Tuesday, October 6th: Data Classification and Problems with Choropleth Maps
    - Reading: Slocum, Chapter 4 (pages 57-75)
- Thursday, October 8th: Cartography Lab Day: Making Choropleth Maps
    - Reading: **NO Reading**
    - *DUE: Lab Exercise 1*
    - **Lab Exercise 2 (50 points)**, to be completed on your own if more time is needed.

Week 8. EXAM 1/Dasymetric Mapping

- Tuesday, October 13th: EXAM 1 (ON BLACKBOARD)
    - Reading: **NO Reading**
- Thursday, October 15th: Dasymetric Mapping
    - Reading: Slocum, Chapter 15 (pages 271-280)
    - *DUE: Lab Exercise 2*

Week 9. Isarithmic Maps/Proportional Symbol &Dot Mapping

- Tuesday, October 20th: Isarithmic Maps & Proportional Symbol and Dot Mapping
    - Reading: Slocum, Chapters 16 (pages 281-301) and 17 (pages 302-326)
- Thursday, October 22nd: Proportional Symbol Mapping, cont.
    - Reading: **NO Reading**
    - **Lab Exercise 3 (30 points),** to be completed on your own if more time is needed.

Week 10. Mapping Multiple Variables

- Tuesday, October 27th: Multivariate Mapping
    - Reading: Slocum, Chapter 18 (pages 327-354)
    - **ASSIGNMENT DUE:** Second Map Critique
- Thursday, October 29th: Cartograms & Flow Maps
    - Reading: Slocum, Chapter 19 (pages 255-270)
    - *DUE: Lab Exercise 3*

Week 11. Spatial Infographics

- Tuesday, November 3rd: Displaying Spatial and Aspatial Data Simultaneously
    - Reading: TBA (Check Blackboard)
- Thursday, November 5th: Making ArcGIS Your Infographic Production Center
    - Reading: **NO Reading**
    - **Lab Exercise 4 (25 points),** to be completed on your own if more time is needed.

PART 3 – GEOVISUALIZATION & TERRAIN

Week 12. Terrain Mapping and Visualization

- Tuesday, November 10th: Introducing Terrain Visualization
    - Reading: Slocum, Chapter 20 (pages 371-388)
- Thursday, November 12th: Acquiring and Visualizing Terrain Data
    - Reading: **NO Reading**
    - *Due: Lab Exercise 4*
    - **Lab Exercise 5 (50 points),** to be completed on your own if more time is needed.

Week 13. Terrain Mapping Continued, Map Animation

- Tuesday, November 17th: Advanced Terrain Visualization
    - Reading: TBA (Check Blackboard)
- Thursday, November 19th: Animated Maps
    - Reading: Slocum, Chapter 21 (pages 389-407)
    - *DUE: Lab Exercise 5*

Week 14. Mapping for Data Exploration

- Tuesday, November 24th: Data Exploration through Cartographic Display
    - Reading: Slocum, Chapter 22 (pages 408-424)
- Thursday, November 26th: **NO CLASS: Thanksgiving Break**
    - **NO Reading**

Week 15. Uncertainty and Visualization/Mapping and the Web

- Tuesday, December 1st: Visualizing Uncertainty
    - Reading: Slocum, Chapter 23 (pages 425-440)
- Thursday, December 3rd: Mapping and the Web, Virtual Globes
    - Reading: Slocum, Chapter 24 (pages 441-459), TBA (Check Blackboard)
    - **ASSIGNMENT DUE:** Third Map Critique
    - **Lab Exercise 6 (25 points),** to be completed on your own if more time is needed.

Week 16. STUDY WEEK. Cartographic Research and the Future of Cartography

- Tuesday, December 8th: Research & the Future
    - Reading: Slocum, Chapter 26 (pages 478-497)
- Thursday, December 10th: Question & Answer, Final Exam and Assignment Questions
    - Reading: **NO Reading**
    - *DUE: Lab Exercise 6*

Week 17. FINALS WEEK.

- Tuesday, December 15th: FINAL EXAM (ON BLACKBOARD)
    - *Normal office hours will be in effect for this entire week unless I notify the class otherwise.*